PHARMACEUTICE RATIONALIS:

OR, THE

OPERATIONS OF MEDICINES IN Humane Bodies.

The Second Part.

With 8 Copper Plates describing the several Parts treated of in this Volume.

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THE PREFACE TO THE READER.

SInce first I began to consider the Operations of Medicines in humane Bodies, and their manner of working, and for some time meditating upon the entire Subject, at length published an Essay of the Rational Curatory part; I became affected with so vehement a desire of farther prosecuting that Speculation, that in all spare hours, (to wit as frequently as I might be vacant from my practice) I could hardly intend or admit thoughts of any other thing: And that not so much that I might please others, as by often turning in my mind, and writing my Meditations of this Subject, I might be better instructed to prescribe to my Patients. For certainly the not duely weighing the Reasons by which Medicines operate, renders all Physick to be Empirical, and to be governed rather by Chance or Fortune than by Advice; and it frequently comes to pass, that a Medicine rashly administred, is but casting a Die for a mans Life. Wherefore, that I might satisfie my self, and practise Physick (as is usually said) with a safe Conscience, it pleased me to bestow more labour in the search of the true Reasons of physical Energies and Efficacies. And because in this Treatise, we chiefly consider Medicines, respecting certain private parts or Regions of the body, and their proper Diseases, therefore we have endeavoured in the first place to perform these three things; *viz.* First that a most accurate Anatomical Description might be given of the parts, (if not already extant) whose distempers and remedies are treated of, as to the Fabrick and uses of all their Vessels. Wherefore, turning over the Breast and Lungs, and most diligently viewing their inward recesses and apartments, what thing soever observable either the Ancients or Moderns have

publiſhed about theſe, and whatſoever further by Kniſe or Microſcope we have detected, we have here ſet forth. In which task, as formerly in ſome others of the ſame nature more exactly done, I muſt confeſs I owe much to the ſedulous labour of my moſt learned Friend Dr. *Edmund King*, and to his moſt dexterous Diſſections. And really I eſteem it ſo neceſſary to lay the Hiſtory of the parts, as a foundation to our Rational Curatory Method, that without it I did believe the whole Superſtructure would be meerly phantaſtical and altogether unſtable, or at leaſt unprofitable. For ſurely, either to practiſe Phyſick, or demonſtrate its Operations on humane Bodies, without an exact knowledge of the parts and paſſages, on which, and by which they work, would ſeem equally abſurd, as if a Philoſopher ignorant of Mechanical affairs, ſhould go about to unfold and explicate the Artifice and cunning Workmanſhip of a Clock moving of it ſelf, according to the Theory of Natural Motion delivered by *Ariſtotle*. Wherefore we have view'd with moſt exact diligence, in the firſt place, the Subjects of Phyſick, or the places of Operation in our Bodies, as the Circuit in which we are to move. Then ſecondly we have not been leſs ſolicitous, that according to the Phænomena of all parts lately detected by Anatomical obſervation, the true and real Hypotheſes of Diſeaſes ſhould be built, whereof we have deſigned the Remedies; that not ſtill perſiſting in the thread-bare paths of Ancient Phyſick, by a certain blind and implicite obſequiouſneſs, after the manner of Beaſts, according to the proverb, to be only guided by our Anceſtors footſteps; but deriving the Cauſes and formal Reaſons of Diſeaſes from their very Springs, we every where endeavour to ſhew, from what Diſpoſition of Blood and Humours, from what affection of Animal Spirits, from what habitude of Fibres, and of other ſolid parts, every diſeaſe proceeds. And theſe things ſo premiſed, and laid inſtead of a ſolid Foundation, at length in the third place, that the ſtructure of our Curatory method being rightly compacted, may happily riſe up and firmly conſiſt, we have gathered together moſt of the Medicines reſpecting moſt of the private parts and regions of the body, and the peculiar Diſtempers thereof, *viz.* both Simple and Compound, both Old and New, both Dogmatical and Empirical, gathered out of the Phyſick-books of every Age, as alſo thoſe chiefly celebrated by Quacks and Nurſes; more choice forms of all which, or at the

leaſt

leaſt the chief of them, and manner of uſing, we have aptly aſſign'd, and annex'd the reaſons as to the Preparations, as alſo the Operations and Effects of them. But that all is not comprehended in this Tract that was omitted in the former, which yet I had hoped might have been, happens from the plenty of matter, and the bulk of the work encreaſing upon our hands: For aſſuredly, it is more than the task of one Man or Generation, to exhibit a compleat Curatory Method, and abſolute in all points. For if this Diſquiſition were more fully inſtituted as to its Latitude, not only all the *Materia Medica* (which is almoſt infinite) but alſo the whole Body of Phyſick offers it ſelf. Wherefore theſe our Attempts court not the name of Treatiſes, but of Eſſays. Truly it will not be needful for many Phyſicians, eſpecially thoſe who neglect the Phænomena of Nature, being intent only on their Practice and Gain, to be learned about the Reaſons of all Remedies: but to the genuine Sons of Art, this will be of value, if not to direct, at leaſt to incite them to the Knowledge and ſerious weighing always of thoſe things they take in hand. And if theſe ſmall endeavours ſhall inſtigate others better to poliſh that Study, whatſoever Reviling I may reap from the malevolent and envious, it ſhall never repent me of my labour. For when I ſhall be well conſcious to my ſelf, that I have not ſuffered my Faculties although ſmall (as the Talent entruſted with me by God Almighty) to periſh through ſloth, nor ſuffered them to be buryed in the earth, but that they may be rendred with ſome Intereſt beſide the Principal, it will much pleaſe me, nay, I ſhall ſeriouſly rejoyce and triumph.

POST-

POSTSCRIPT.

WHile these were Printing, the most sad message arrives, that the Author, most worthy of Immortality, oppressed by the irresistible assault of a Pleurisie, is departed from among the Living; neither did the Arts profit their Master, which did all others. The Reader will pardon us, if we for a little space celebrate the Funeral of so Sacred a Memory, nor esteem it superfluous to hear in a few words, what manner of person he was who wrote such things: yea he will rejoyce to understand that he was equally Good as Learned, that he also exercised himself in the Practice of Piety, who was most conversant in that in Physick.

The matter requires a just Commentary, but we shall briefly propound what at first came into our sudden thought, while our mind was surprized with so unexpected an Accident.

Extracted from an honest Family, he had a Father educated in ingenuous Studies, who after he had gone Master of Arts in the University of Oxford, being taken with the retiredness of the Countrey, repaired to a Possession he had near the same City, and solely attended his Domestick Affairs, and maintenance of his Family: being enough deserving of the World, who begat such a Son. But He, the Civil War raging, being snatcht away by the Contagion of a Camp-Feaver, left his Son an Orphan, near about twenty years of age, placing the first Rudiments of his Studies in Christ-Church; who being called to take on him the care of an Inheritance, for some time remained in the Countrey, but harrased by the Incursions of the Rebels, who were possessed of a Garrison strong enough Five miles from thence, and every where Plundering, he betook himself again to Oxford, being the Tents of the King as well as the Muses; where listing himself a Souldier in the University Legions, he received Pay for some years; untill the Cause of the Best Prince being overcome, Cromwell's Tyranny afforded to this wretched Nation a Peace more cruel than any War. From thence, the Church being trampled on, and Divinity together with Divines suppressed, he applyed himself to the study of Physick, in which, in a short time he made eminent progress. In the mean time being nevertheless addicted to the study of Piety, (whereof it was a considerable demonstration, that when the Liturgy of the Church of England was thrust out of the Church, and none could be present scot-free at those holy Offices after the ancient manner) he entertained Religion then a Fugitive; and allotting part of his House for Holy uses, brought it so to pass, that

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Aſſemblies, and Publick Prayers, and other Offices of Piety were conſtantly performed according to the Rites of the Church of England. *In the mean time he writ and publiſhed thoſe moſt excellent Tracts by which he firſt became known to the World,* viz. *Of* Fermentation, *of* Feavers, and of Urines.

At length the King reſtored, and acceſſe opened to Univerſity Degrees and publick Employs, he proceeded Doctor, and was publickly declared Profeſſor of Natural Philoſophy, which Profeſſion he did adorn with the higheſt praiſe; Moreover, his Anatomy of the Brain, *and his Treatiſe of the* Scurvy, *and of* Convulſions, *were publiſhed.*

But about the Year 1667. *being called to* London *to practiſe Phyſick, it is incredible to relate, how ſoon, and with how great Commendations he grew famous, eſpecially being ſo compoſed by Nature and Cuſtom, that he could not recommend himſelf by words compoſed to deceive, or the cunning Arts of Mountebanks. But though he ſpent whole dayes and nights in care of the Sick, he was yet at leiſure to adorn his Art by compoſing Books, from whence among a thouſand Interruptions he publiſhed theſe Treatiſes, of* the Accenſion of the Blood, *and of* Muſcular Motion, *of* the Soul of Brutes, *of* the Diſeaſes of the Brain, *and the firſt part of his* Pharmaceutice Rationalis, *and at length the* other *which we now preſent. All which, with the Authors Animadverſions, and writings unpubliſhed, being collected into one Volume, and committed to the care of the moſt faithful Apothecary Mr.* J. Hemming, *we hope ſome time to print here.*

Moreover, the ſame care for Divine Worſhip was ſtill impreſſed on this moſt Pious Soul; and ſince he could not be preſent, by reaſon of Employ, at the Canonical Hours at the Publick Devotion in the Pariſh Church where he dwelt, he procured the Sacred Offices of the Church to be there celebrated early in the Morning and late in the Evening, and for the moſt part was conſtant at them, whatever Buſineſs was repugnant. And ſeeing this Inſtitution profitable to many in the Neighbourhood, who were likewiſe all day detained about Commerce and Trades, he endowed a Prieſt with a fit Salary at his Death, to diſcharge that Function for ever.

But ſmall was this proof of his excellent Pious temper. Although no Perſon more frugal and attentive to his Employ, yet none more munificent, denying all things to himſelf, yet denying nothing to the Poor and helpleſs. Beſides what he beſtowed with his own hands, he provided Almſgivers and Diſpenſers of his Charity every where in the City, Countrey, and in the Univerſity. I ſpeak what I know by frequent experiment; one might eaſier have received from him, for a fit object of Charity, an hundred Crowns, than have extorted as many farthings from moſt others. And though any one might juſtly impute the large Revenues he acquired, to his indefatigable Diligence and conſtant Frugality, yet I believe it rather to proceed from his

his bountifull Largesses, and the Divine benediction thereon. From the beginning of his Youth to the last period of his life, he was Master of no summe of Money which he accounted his own, untill he had consecrated some considerable Portion of it to God and the Poor: And when a few dayes before his last, which I must ever lament, we conferr'd together, (as if he had foreknown his approaching Death, and being more solicitous about the Poor than his own Offspring,) he diligently advised about stating these Accompts.

I omit here to decipher, how undisturbed he was in Adversity, and how temperate in Prosperity; how modest in the highest Fame for his Learning; when unworthily provok'd, how prone to forgive Injuries; how faithful to his Prince to his death; how obedient to the oppressed Church; how candid and ingenuous in the Profession of his Art; how indefatigable in his Studyes, how sparing in his Speech, and how much a Christian in the whole state of his Life. To finish all which according to his deserts, is not the work of one hour or Paragraph. In short, he was constantly exercised in Prayers, Studyes, Labours, Almes, and Watchings; at length being near Fifty seven years of Age, in the beginning of November *he seemed troubled with a Cough (now the Epidemical Disease of the time) which (while it was thought light and inconsiderable) suddenly passed into a Pleurisie and Peripneumonia. And when this most expert Person was not relieved by frequent Bleeding and diligent taking of Remedies, himself perceived the Period of his Life to approach, (his Friends hoping better;) and after three dayes his Houshold affairs being settled, and having taken the* Viaticum *of the* Holy Eucharist, *and being received into the Peace of the Church, he commended his pious Soul to God, having his senses entire to the last breath, and finisht his most exemplary Life with the like Death.*

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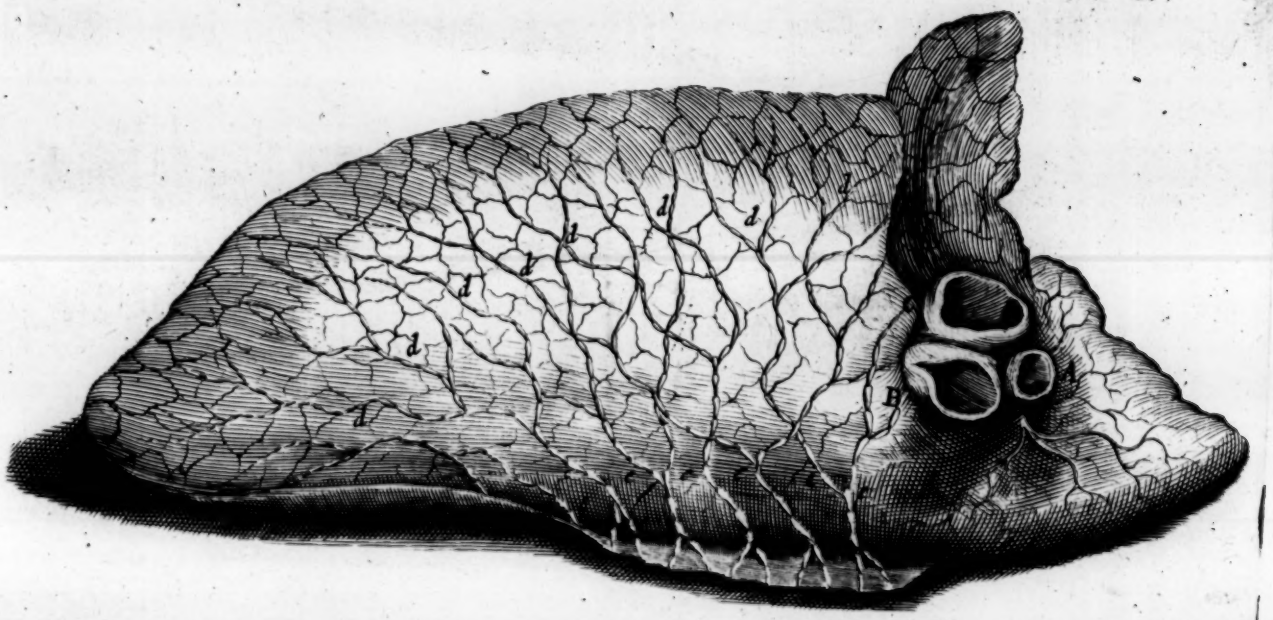
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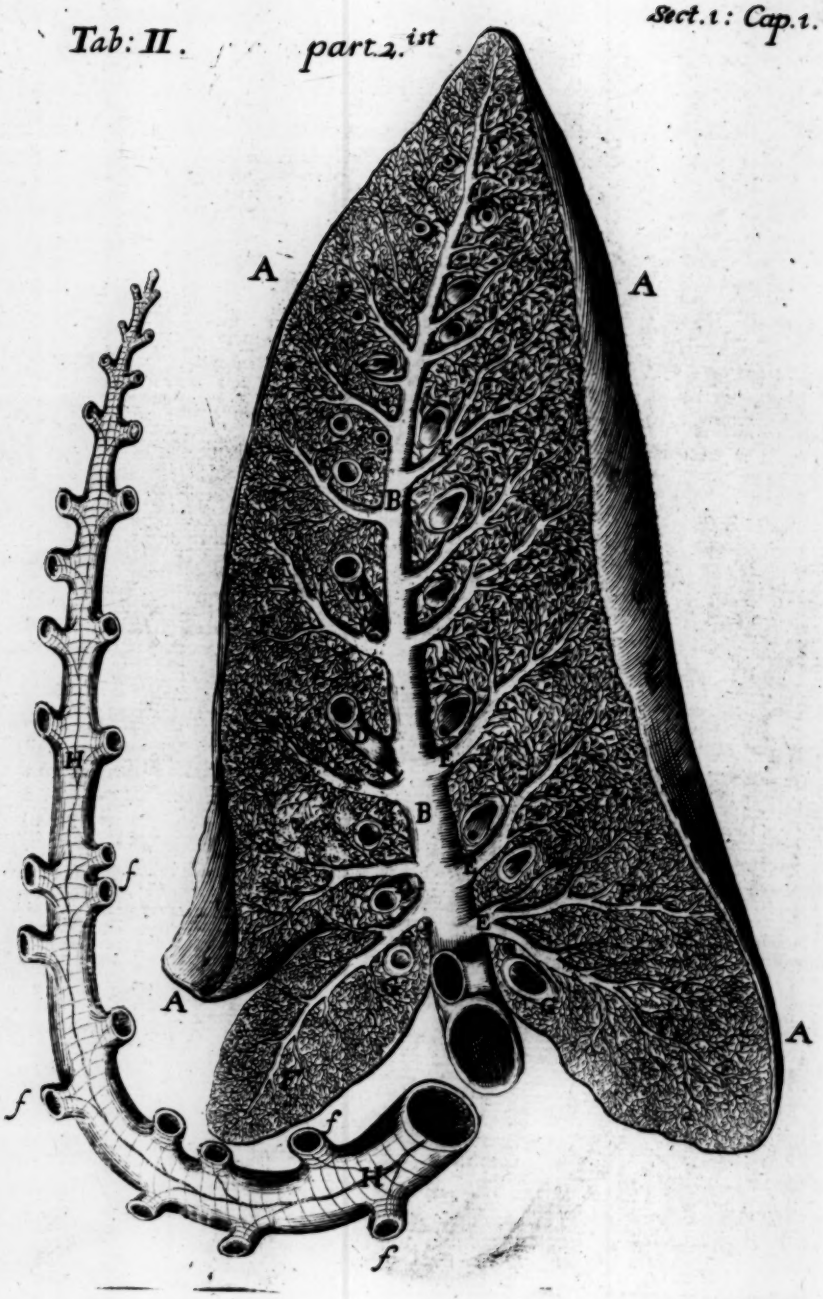
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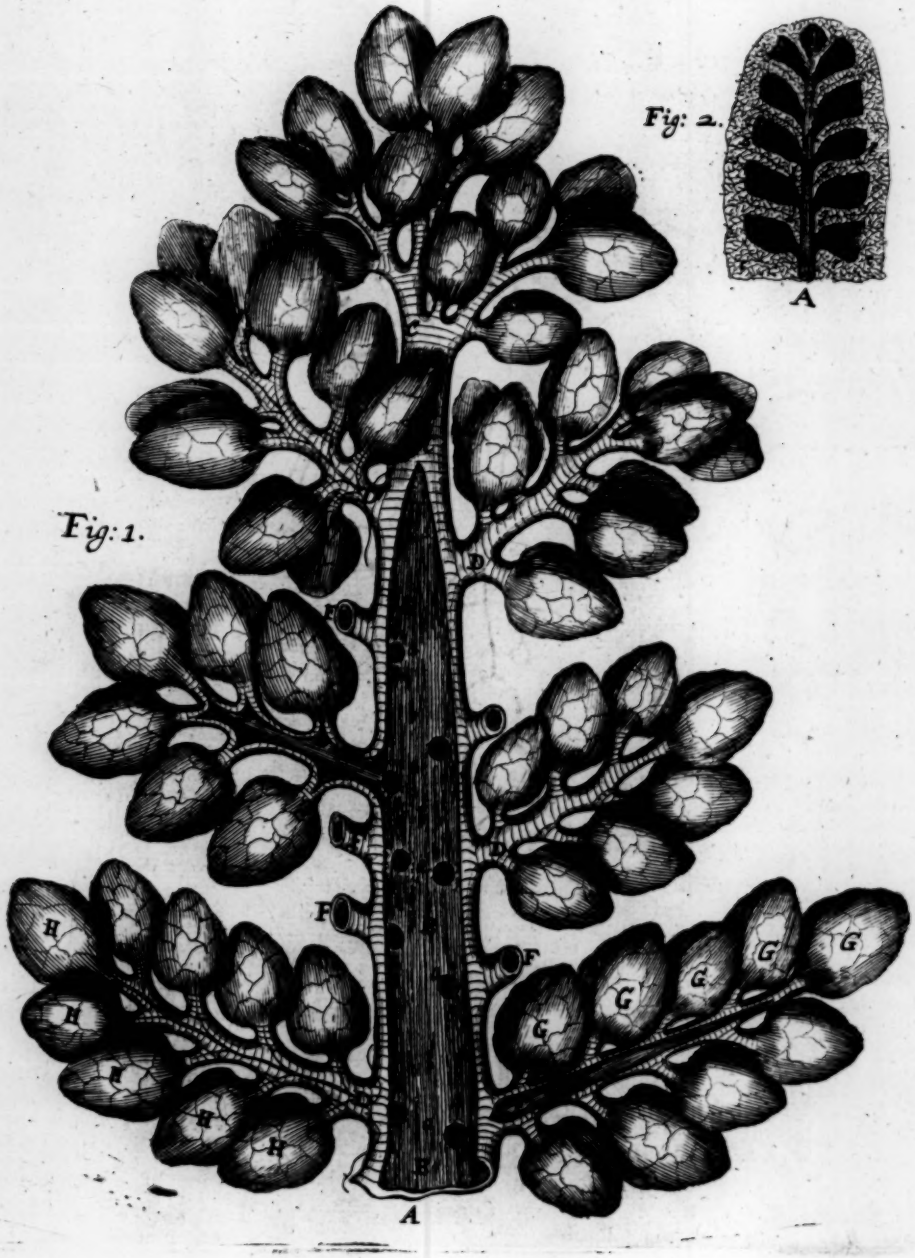

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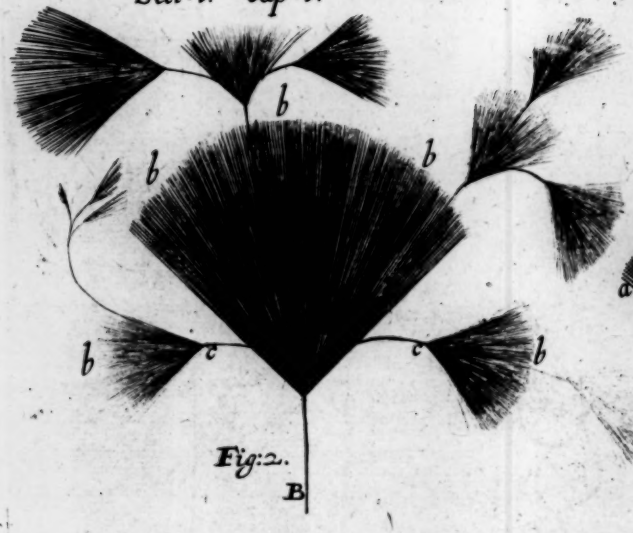

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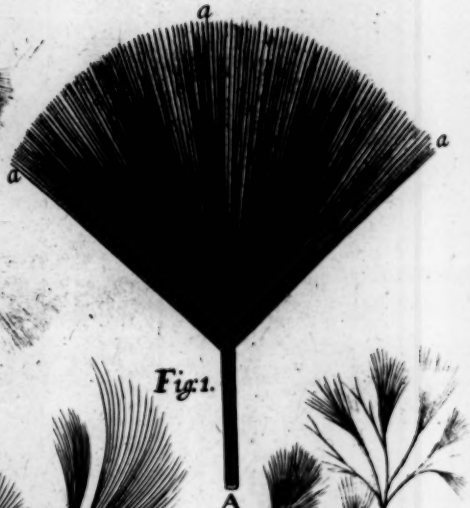

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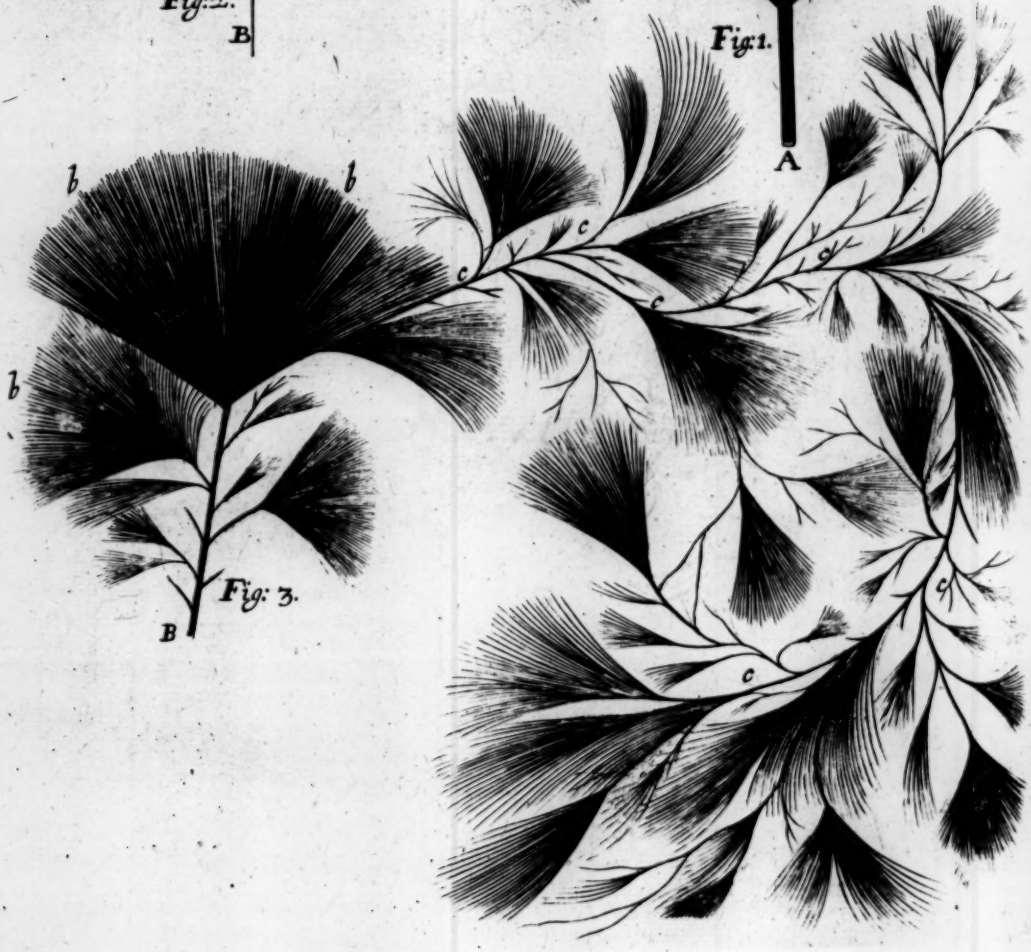

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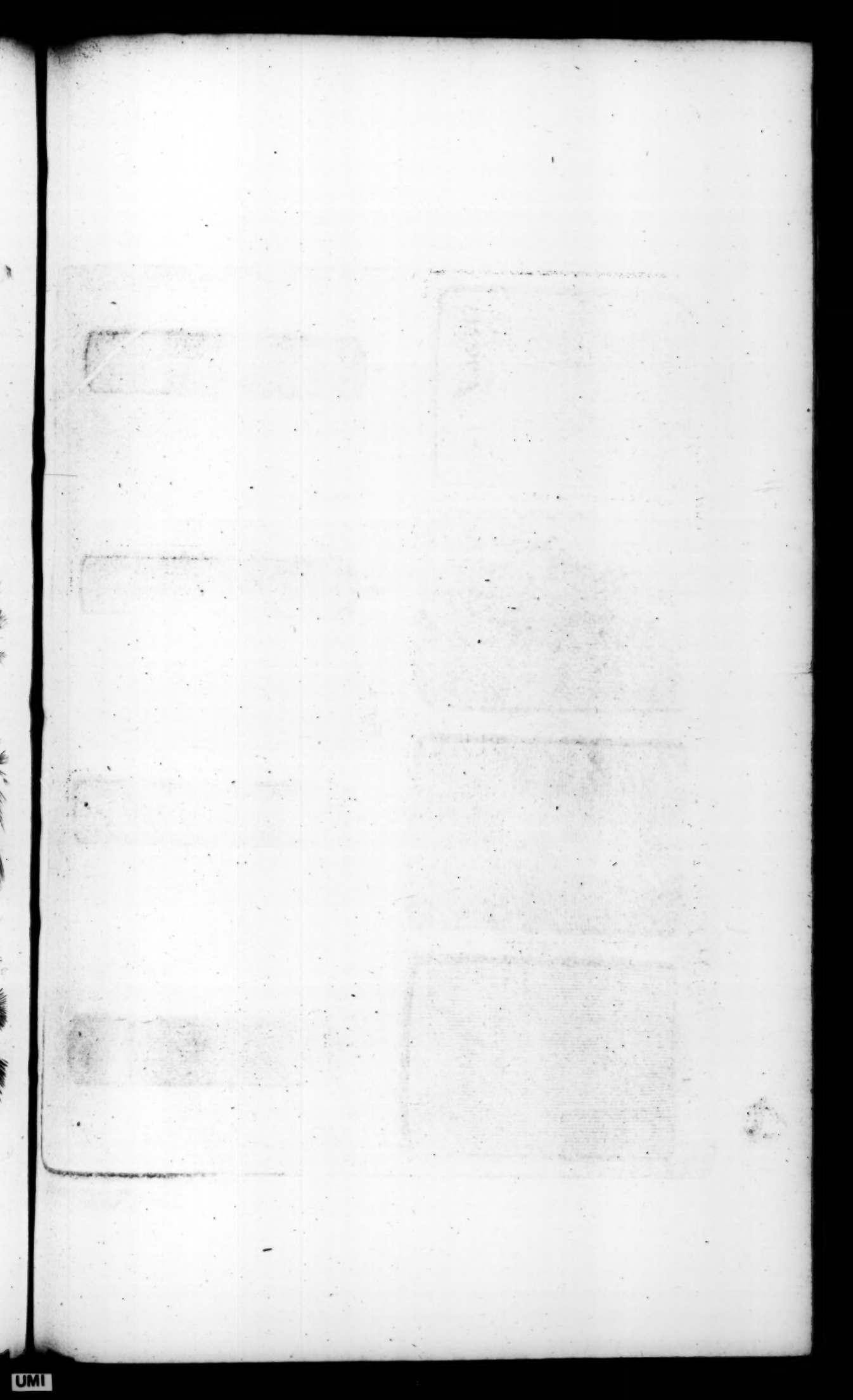

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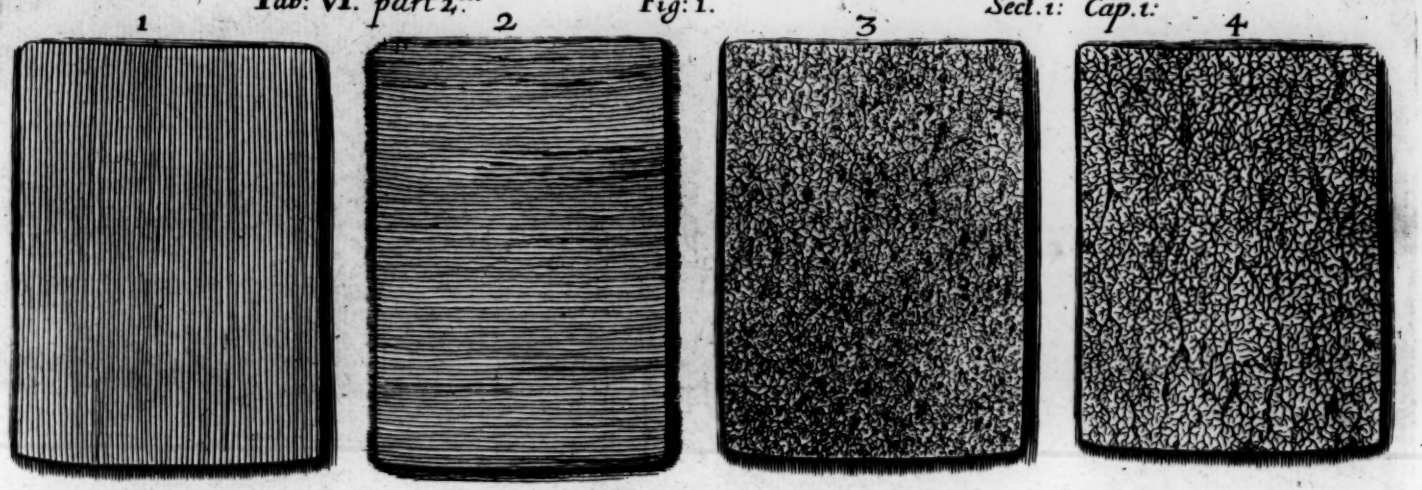

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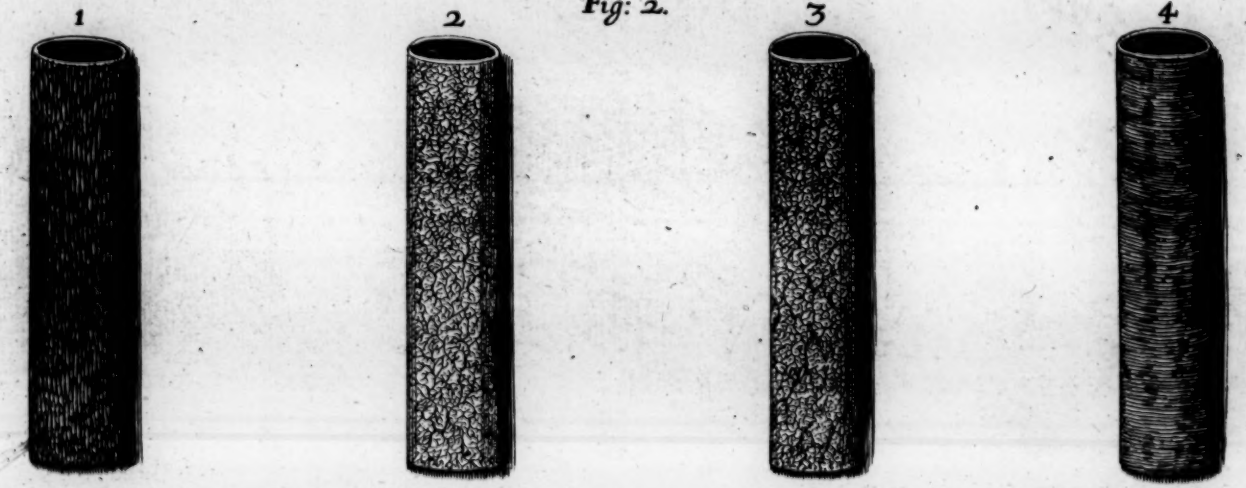

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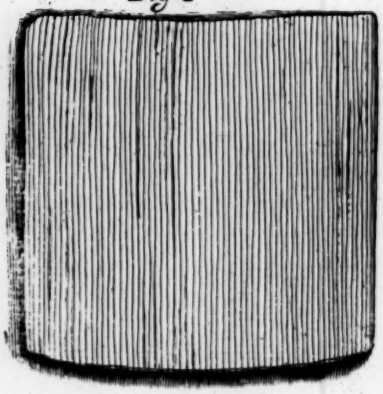

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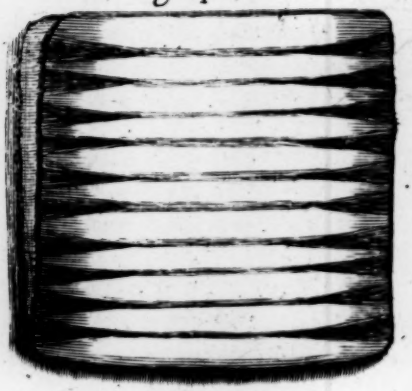

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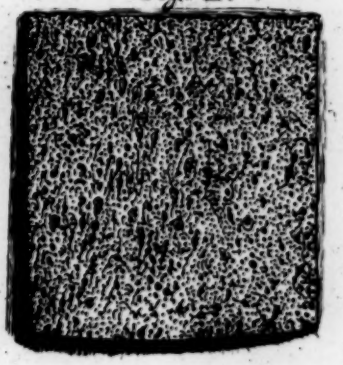

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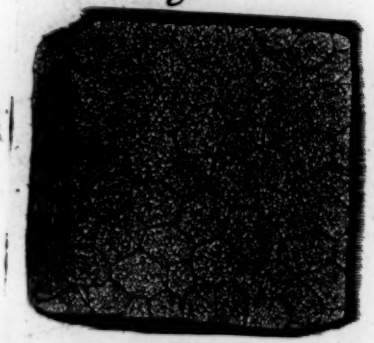

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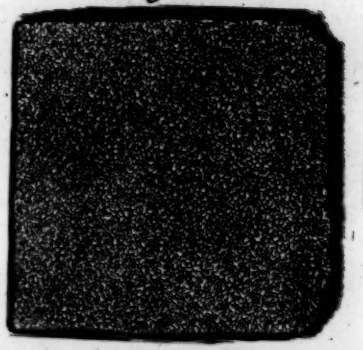

THE SECOND PART OF *PHARMACEUTICE RATIONALIS*, OR OF THE OPERATIONS OF MEDICINES IN HUMANE BODIES.

SECT. I.

Of the Medicines of the Thorax.

CHAP. I.

Of the Organs of Breathing and their Uſe.

IN the former Treatiſe having eſſayed to explain the reaſons of every Medicine, for the moſt part we have toucht only upon general Medicines, namely which excite ſome Evacuation, or recreate and reſtore the fainting Spirits, or calm thoſe which are too much raging and unquiet: But moreover there are many other Remedies, and thoſe of ſeveral ſorts, which are ſuppoſed to have reſpect to ſome peculiar part of the Body, or ſome particular Diſeaſe, and to be appropriated to thoſe ends by a certain kind of ſpecific virtue or operation. Now as concerning both the *Ira* and *Fibra* of theſe, at leaſt the chief of them, *viz.* whether it be really ſo, and for what reaſon it comes to paſs to be ſo, it ſeems now worthy to be inquired into: And firſt of all we will treat of the Medicines of the *Thorax*, *viz.* thoſe that are wont to be preſcribed againſt the Cough, Phthiſic, Catarrh, Aſthma, Dyſpnœa, and other Diſeaſes of the Breaſt. *The Authors purpoſe in the preſent work.*

But ſince the reaſons as well of theſe Diſeaſes as of medicinal Operations in healing them ſeem very abſtruſe and moſt difficult to declare: therefore before I enter upon this task, ſomething ought to be premiſed about the parts themſelves, as well touching their uſes and ordinary actions, as their ſickneſſes or preternatural affects. As to the firſt, the parts of the *Thorax* are either principal, as the Heart and Lungs, *The parts of the Thorax.*

with the Veſſels appendent unto them; or ſubſervient, as the Membranes and Muſcles, with the Diaphragma; as likewiſe the Ribs, with the Vertebra's; the Pneumonic Veſſels, with the nervous Fibres and Glandules. The conſideration of the Heart and its Veſſels doth not properly belong to this place, becauſe not ſo much the ſickneſſes of the Breaſt alone as the general ſickneſſes of the whole body are uſually reckoned amongſt its paſſions. Whereas therefore the remedies appointed to cure the diſeaſes of that region, have ſpecial reſpect to the Lungs, and to the other Organs of breathing ſerving them; therefore firſt we will deſcribe the fabrick and uſe of theſe parts, then their diſeaſes afterwards, together with the method of cure, and remedies; and laſtly endeavour to add the reaſons of all theſe.

The ſubſtance of the Lungs altogether membranous.

The ſubſtance of the Lungs was always accounted by the Ancients, and moſtly hitherto by modern Authors for fleſh and a Parenchyma, like the frame of the other bowels; which notwithſtanding was accounted lighter and ſpongeous (for as much as it was apt to be diſtended much by air puffit in, and to float upon waters.) Moreover, whereas the Lungs taken out of an Embryo look red, and ſink in water; and the Lungs of ſome grown perſons being boiled, appear compact enough and more ſolid; almoſt no man doubted but they conſiſted really of fleſh: until lately the renowned *Malpighius*, a moſt diligent Searcher of Nature, found thoſe parts to be altogether excarneous, and meerly membranous; "and therefore he judges the bulk of "the Lungs, if the Nerves and certain Veſſels be ſeparated with the branches of the "*Trachea*, to be a certain heap of little Bladders, and thoſe ſmall Bladders every "where ſtretched out and ſinuous, to obtain ſuch poſition and knitting together, "that an entrance lies open into them from the *Aſpera Arteria*, and ſo from one "into another, until at length they all end in the Membrane incloſing the Lungs. "And truly that it is ſo, he makes clear to ſenſe by an Experiment. For let a Lung "be taken out hot, and let water be ſo often caſt by a Syringe into the Pneumatic Ar"tery, as till the whole frame appear ſomewhat white, and almoſt tranſparent, the "blood being clean waſhed out; afterward this water being ſqueezed out by preſ"ſing, and the air let in by the Wind-pipe, and pen'd in, let the Lung ſo filled be "dryed: and it does not only, whilſt expoſed to the light, outwardly ſhew tranſpa"rent little Bladders; but being inwardly cut, it preſents a white heap of little "Bladders to the eyes. Beſides, having viewed it with a Microſcope, he diſcovered a certain wonderful Net, binding and knitting together every one of thoſe little Bladders; which Net conſiſts of the minute productions and branchings of the Artery and Vein; which Veſſels circulate the blood by the ſmall and crooked paſſages, and by the many turnings of the Pipes.

Conſiſting of almoſt infinite Lobes.

The moſt renowned man hath found out beſide theſe little Bladders for the moſt part conſtituting the frame of the Lungs, a new and more admirable furniture of this Bowel, *viz.* he ſhews plainly the bulk of the Lungs to be blown up by almoſt infinite lobes girt about with their proper Membrane, which being endued with common Veſſels, grow to the ſmall twigs of the *Aſpera Arteria:* the inſertion and ſituation of which kind of little Lobes are manifold, as being ſometimes affixt to the Baſis of the *Trachea*, ſometimes to the Ribs, or to its Cone; alſo according as they end in the outward and plain ſuperficies, or in the corners of the Lungs; and according as they ought to have a due poſition, knitting and inter-ſpaces among themſelves, rightly to fill up the frame of the Lungs. The little lobes out of which each lobe of the Lungs is made up, in the third Table are accurately and to the life expreſſed.

Their little branchings.

Certain inter-ſpaces diſtinguiſh theſe little lobes (which manifeſtly appear in a larger Lung or in any other half boiled) which (as the renowned Perſon hath obſerved) are not bare cavities or empty ſpaces, but they have many Membranes ſpreading from the little lobes, ſome parallel, ſome angular, and are alſo covered with many Veſſels, ſo as theſe inter-ſpaces are certain membranous little bladders, yet tranſparent and moſt thin. If you lightly open in one ſingle lobe of the Lung one of theſe inter-ſpaces with the point of a knife, and ſhall blow into it by a ſmall hole through a Pipe, preſently that whole lobe will be very much extended, every inter-ſpace being puffit up; and then if you bring this frame to the light, the inter-ſpaces being made tranſparent, do ſever by great intervals every lobe very conſpicuous; and ſo every rank of the lobes will appear like a Polypody-leaf, and under the ſame figures, as *Malpighius* hath deſcribed, and are repreſented in Fig. 2. of our third Table. But when the little lobes are filled and extended by liquor eaſily congealing caſt into

into the paſſages of the *Trachea*, the appearance thereof is ſomewhat diverſe, and ſeems in the form of Grapes, as is expreſſed in Fig. 1. of the ſame Table. The Veins and Arteries every where accompany this production of the *Aſpera Arteria*, and extend themſelves through the whole ſubſtance of the Lungs by a certain knitting and alike branching. This is plainly perceived by a pleaſant ſight, in a lobe of the Lungs being emptied and turgid, Quick-ſilver being caſt into ſome of the Veſſels, and others filled with a coloured liquor. But in diſſecting the living, another ſort of Veſſels, *viz.* Lymphæducts are manifeſt to the eye to be ſpread through the whole Lungs: and we have in another place clearly enough ſhewn, both very many Nerves and nervous ſlips every where to be diſtributed through them. Beſides theſe parts, and the primary or chief veſſels of a Lung, ſome others, and thoſe as it were ſecondary, are to be obſerved. For the Pneumonic Veins and Arteries are endued with other ſanguiferous Veſſels ſpringing from the *Aorta*, moreover with Glandules, and likewiſe with Fibres as well nervous as moving; and the Wind-pipe is endowed with every one of theſe, and cartilaginous ones beſides.

The Lymphæducts and nervous ſlips.

Whence we may infer, that the entire frame of a Lung is meerly fiſtulous, and compacted of Pipes of ſeveral kinds and magnitude, and variouſly and moſt intricately diſpoſed: which although they may appear wonderfully complicated, and many ways twiſted and wreathed, are yet every where continuous, and being ſtretched out with a mutual reſpect to one another, do hither and thither in good order and regularly convey and diſpoſe the air, the blood, the *Lympha*, and animal Spirits for ſome acceſſary uſes. To deſcribe as it were with a Pencil this bulk of a Lung, together with the branchings, ſeparatings, and mutual complications of all its Veſſels, would be no leſs difficult a task than to trace the ſeveral threads of a harl of ſilk, and their reſpect one to another. Nevertheleſs, that both the Pathology of the *Thorax*, and the cure, may be duly known according to our deſign, it ſeems to be material to recite here all the Veſſels of the Lungs one after another, and to deliver as well their deſcriptions, as their preternatural uſes and diſeaſes, to which at length the Therapeutic Method ſhall be ſubjoyned. And theſe are the Veſſels of which the entire fabrick of the Lungs conſiſts, the Wind-pipe, with the *Bronchia* and little Bladders, Arteries, Veins, Lymphæducts, and Nerves, to which may the parts and appendices of thoſe Veſſels be added, *viz.* the Coats of the greater Veſſels, which are endued with other ſanguiferous Veſſels and Glandules, and alſo with nervous Muſcles and Fibres.

The Veſſels of a Lung.

Therefore as to the chief Veſſels of the Lungs, although all theſe, by reaſon of their mutual offices, communicate among themſelves with a wonderful affinity; yet the Arteries and Pneumonic Veins attend on the *Trachea* and its partitions the moſt exactly; for the branches and ſprigs of every one of theſe ſpringing alike from their reſpective ſtocks, and ſtretcht out to and fro, go on every where with like pace; ſo that the *Trachea* and its branches are always in the middle, above that the Vein, and beneath the Pneumonic Artery are carried, and all are diſtributed with an equal and ſociable branching: and the ſprigs and branches, ſent from each of them, are preſently applied to their like, and are interwoven like wonderful Nets, of which the texture of the Lungs is almoſt totally conſtituted. It will be impoſſible to deſcribe the ſpreadings out and various complications among themſelves of all theſe going on together, as to the leſſer ſprigs and ſlips; yet if you will caſt into every veſſel apart Quick-ſilver, hot and flowing Gypſum, Wax mingled and made liquid with Oyl of Turpentine, or ſome ſuch matter, which will extend all or the chief paſſages, and continue them ſtufft, then you may exactly enough repreſent the figure: and after that manner the frame or texture of the whole Lung may be conceived, each being deſcribed by it ſelf and apart. Wherefore upon theſe and all other Veſſels and parts of the Lungs we will treat in order; and firſt of the *Trachea* or Wind-pipe.

wait on the Trachea.

The Wind-pipe or *Aſpera Arteria* is a Pipe ſomewhat long, conſiſting of Griſles and Membranes, which beginning from the Throat or loweſt part of the Jaws, and leaning on the Gullet, and deſcending into the Lungs, is diſperſed by manifold little branchings through their whole frame. It is divided into two parts by the Ancients, *viz.* the upper, which is called the *Larynx*, and the nether commonly called *Bronchus*; to which a third or loweſt is added, by *Malpighius* called *Veſicularis*, or the bladdery one.

The deſcription of the Trachea.

The former of theſe, which is the beginning of the *Aſpera Arteria*, doth chiefly ſerve

The deſcription of the Larynx.

ſerve for vociferation or loud noiſe, formed of many and various Griſles, to which alſo are adjoyned proper Muſcles; the deſcription and uſe of all which are ſo exactly delivered by Anatomiſts, that there is no need of dwelling longer on the deſcription: we only advertiſe for methods ſake and by way of abridgment, that the Larynx contains ſome greater Cartilages of divers forms, and ſome uniform; the former, by reaſon of reſemblance, bear the denomination of *Epiglottis*, the Buckler-like Cartilage, the Ring-Griſle, and ἀρύταινοειδὲς. To this laſt doth ſucceed a continual rank or row of Cartilages, faſhioned altogether after the ſame figure and manner; every one of which, whereas they reſemble a circle, but not compleat, are diſpoſed after ſuch a ſort, as if one ſo compoſe many wooden Rings, that there ſhould grow up from the ſides of them, by laying a good many one upon another, a certain Pipe as it were with Ribs. Theſe circular Cartilages are equally diſtant one from another in their whole paſſage, and are knit together by the benefit of an inner Membrane (which fills up the ſpaces between like the *Perioſtium*) as with a ligament. But the hinder part of every Ring-like Griſle where it lies upon the Gullet, that it may ſerve better to the ſwallowing of meats, turns into a Membrane, which altogether is the ſame, and binding together thoſe cartilaginous rings, and covering the whole hollowneſs of the *Larynx*, is always moiſt with an unctuous humour, by which it may as well be defended againſt the ſucking in of ſharper air, as breathing out more acrimonious vapours.

Membranes encompaſſing the wind-pipe.

Beſides this inner Membrane, alſo another outward, though thinner, encompaſſes the whole Wind-pipe, by the aid whereof both the Cartilages are more firmly knit among themſelves, and the whole Pipe bound to its neighbouring parts, and deſcends more ſafely and ſtrongly into the Breaſt. Beſides, we judge there are ſome other uſes and offices of either Membrane, than that it only ſerve to faſhion or defend the ſides of the Wind-pipe: for as much as we do here manifeſtly obſerve many Nerves and nervous ſtrings every where inſerted, and alſo the more inward Coat of the *Aſpera Arteria* to be endued with Fibres, as well nervous as fleſhy or muſculous: from whence we may conclude the Wind-pipe to injoy both a certain ſenſe and motion either in the whole, or at leaſt in ſome parts. And truly it is manifeſt even to common obſervation, that its more inward paſſage doth excel with a moſt acute ſenſe; for as much as it is ſo much provoked by the ſmalleſt prejudice, that preſently it is wonderfully forced into a convulſive motion, *viz.* a Cough: but as a ſenſe of annoyance, and from thence very often an inſtinct of motion ariſes from this Veſſel; ſo we think that its Fibres do after a ſort move of themſelves both in breathing and coughing. Surely in reſpect of this it is not to be doubted, becauſe in this inner Membrane we find two orders of muſcular Fibres in that faſhion diſpoſed as in the *Aorta* and Inteſtines: to wit, there is one upper order of ſtraight Fibres, which while they are contracted, make all the circular Cartilages to be drawn together nearer to one another, and for that cauſe to abbreviate the Trunk of this Veſſel according to all its parts ſucceſſively. Under this lies another order of circular Fibres, which (while they are pufft up) being contracted, the hollowneſs of the Wind-pipe is much narrowed. Therefore when the moving Fibres of either kind make the paſſage to be ſtraitned according to all its dimenſions, it is obvious enough that they conduce to the diſcharge of the function of breathing, and more or leſs to be active, as there is endeavour to breathe quicker or ſlower, more intenſly or more remiſs. Theſe Fibres being more vehemently contracted in a Cough, in hawking, in blowing out, and certain other more ſtrong exerciſes of expiration, do force the breath and other contents of the *Aſpera Arteria* to be violently expelled. Moreover from this action ſometimes either depraved or hindred, it ſhall be declared hereafter how an Aſthma, a Dyſpnœa, and ſome other diſeaſes about breathing do ariſe.

The glandulous and vaſculous Coats.

This inner muſculous Coat hath alſo two others, as if growing thereunto, to wit, one glandulous, and that full of veſſels. For as in another place we have remarked about the Anatomy of the ſanguiferous Artery, one may alſo here take notice, that the inward Pipe of the Wezand is covered with a moſt thick weaving of Veſſels of every kind, and eſpecially of thoſe carrying blood, in faſhion of a Net. The Arteries not ſpringing from the Pneumonic Veſſels, but from the Bronchial branch (which the moſt renowned Mr. *Ruiſch* diſcovered to have its riſe from the *Aorta*) are inſerted into this ſame; which the veiny ſlips do accompany, owing their origine to the *Vena cava*. The nervous ſprigs meeting theſe two, are variouſly folded; and ſo of all weaved together, is framed as it were a little Net, covering the whole back of the

Wea-

Weazand, under which folding of Veſſels very ſmall and whitiſh Glandules are every where ſtrewed, or rather cleave to them; juſt in the like manner, as we have in another place ſhewn to be in moſt other greater Veſſels, and in all membranous Bowels: on all which the Lymphæducts adjoyned do wait. As to the uſe of theſe, without doubt the Arteries and Veins waſh through the Pipe of the Weazand with bloody ſtream for its nouriſhment; and the Nerves carry plenty of Spirits, and the faculty of performing motions to the muſcular Fibres. Afterwards whatſoever of ſuperfluous moiſture be left by the Arteries, that the Veins cannot bring back, the Glandules do receive and retain, until it may be ſent back to the maſs of blood through the Lymphæducts. When they are too much filled, by reaſon of the Lympha more plentifully left, a humour diſtilling from the Glandules as well as from the Arteries into the hollowneſs of the Wind-pipe brings a Catarrh. All the Coats of the *Aſpera Arteria* diſtinct and ſeparated from each other are expreſſed in the ſeventh Table.

Of the Bronchia.

The ſecond part of the Wind-pipe, commonly called *Bronchos*, begins from the entrance of the Lungs: for near the fourth Vertebra of the Cheſt that great Pipe deſcending, is divided into two Trunks, one whereof goes towards the right ſide of the Lungs, the other the left: afterwards both having entred the Lungs, and being ſubdivided for the greater Lobes, diſtribute very many ſprigs (as for the moſt part in the gills of fiſhes) to the Lobes or leſſer Lobes through the whole frame of the Lungs. The paſſages of all theſe are furniſhed, even as in the Larynx, with Cartilages, but framed ſomething in a differing manner: for in the *Bronchia* theſe are not Ring-like, but reſembling a Coat of Male, ſo that when there is need to contract thoſe paſſages, the inferiour Cartilage goes under the hollowneſs of the upper, almoſt in the ſame manner as it is in the joynts of the ſhelly Coat of a Lobſter. Proviſion is ſo made by the work of God, that when the Lungs are dilated, the *Bronchia* are ſtretcht out into the greateſt length; and when they are contracted, the *Bronchia* are abbreviated, one part being drawn into another.

Their Syſtole and Diaſtole.

The Coats of the *Bronchia*, as alſo of the Larynx, have muſcular Fibres of both kinds, together with the Glandules and the Net-like twiſting of Veſſels: from whence we may alſo conclude, that all the leſſer Pipes of the *Aſpera Arteria* have their conſtant turns of Syſtole and Diaſtole, *viz.* all the Pipes are contracted while we breathe out, and relaxed while we ſuck in air: moreover from the ſame Glandules and little Net of Veſſels every where continued almoſt within every inward receſs of the Lungs, doth diſtil the Catarrh humour. A certain Bronchial branch of the *Trachea* belonging to each Lobe of the Lungs is deſcribed in the ſecond Table *H. H.*

The Lobes of the Bronchia.

And the branched *Bronchia* of both ſides not only conſtitute two or more greater Lobes; but, as *Malpighius* hath obſerved, many leſſer or little lobes diſtinct among themſelves; for each Bronchial branch ſends forth to and fro many little branches or twigs, every of which twigs being joyned with alike twigs of the Pneumonic Artery and Vein, from thence are parted into innumerable leſſer ſprigs; all which being every where fellowed and complicated among themſelves, and having got Nerves and peculiar Lymphæducts, and ending in the outward ſuperficies of the Lungs, repreſent as it were a certain private Grove; and ſo the whole ſtructure of the Lungs conſiſts of many little branches of the aforeſaid Veſſels complicated, as it were of ſo many ſeveral Groves. The branches whereof and outmoſt ſides of which, although they may ſeem mutually to touch themſelves and cleave together, yet they are disjoyned one from the other, and are every one bounded within their proper limits; far otherwiſe than the productions and communications of Veſſels are in the Brain, where the Arteries and Veins riſing up in its ſeveral corners, extend on every ſide, and creeping through its whole ſpace, and mutually inoſculating, do all communicate among themſelves.

Their little branchings disjoyned from one the other.

The uſe of the aforeſaid frame.

That former faſhioning of the Veſſels hath been very neceſſary to the uſes of the Lungs; for ſeeing the air ought only to enter the Lungs for that end, that it might pour out to the blood nitrous particles for its flame and vitality or life, and preſently return back; and ſeeing the blood doth paſs through the Lungs for that cauſe, that it might meet the air ſuckt in according to all its parts; therefore it behoves that both theſe, *viz.* the air and the blood be divided into ſmall portions, and with theſe make every where diſtinct and ſhort meetings. The manner of this is moſt elegantly perceived in the gills of fiſhes; for ſeeing the *Bronchia* are as

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ſo many greater Lobes, every one of theſe is divided into many rundles, furniſhed with a complication of every kind of Veſſels, as if it were into ſo many Lobes; in every one of which the blood is drawn out by minute portions, as it were little rivulets, that it might throughly meet with the nitrous particles, and afterwards return into its chanel.

The uſes of the little bladdery Cells.

The Bronchial Pipes lead into the utter cavities, *viz.* into the numerous little Bladders diſcovered by *Malpighius*; which truly are certain continued parts of the *Aſpera Arteria*, but diſtinct from the former, becauſe the Griſles are wholly wanting to them, and, which ſupply the turn of theſe, are diſtant one from another in larger ſpaces: for all the Bronchial branches ſend forth leſſer ſlips from themſelves every way; whoſe paſſages, although void of Griſles, notwithſtanding are ſtraitned as it were with certain ligaments at certain intervals; and the ſpaces between theſe being filled with air ſuckt in do make partly thoſe ſmall bladdery little Cells. In truth thoſe paſſages may not unaptly be compared to the Gut Colon of a Mouſe, whoſe continued hollowneſs in as much as it is girt about in divers places, ſeems to be divided as it were into many little purſes. Moreover thoſe bladdery paſſages being ſhorter on either ſide the *Sinus* or hollowneſs, have as it were particular little Bladders growing thick to them, and therefore the heap of all the Cells ſeems not much unlike to a bunch of Grapes. The Figures of theſe as much as may be are exactly repreſented in the third Table. Thoſe little bladdery Cells, that they may put forth their contracting endeavours for breathing, have muſcular Fibres, as is plainly ſeen by the Microſcope. For as much as great plenty of air ought to be drawn within the Lungs, and reſerved in part, leſt it fail at any time; therefore beſides thoſe upper paſſages which are as it were the threſhold and dens, moreover more inner chambers and capacious are required, in which the air may be treaſured up, and from thence be diſpenſed upon occaſion. For it ſometimes happens the external is too ſharp, or otherwiſe diſagreeable to the Lungs; ſo that as it was greatly neceſſary that it ſhould be ſuckt in more ſparingly, and its vehemence preſently be attempered and rebated by the air treaſured within. Moreover it cannot be drawn in or inſpired otherwhile in quantity great enough, as in running, ſinging, or much ſpeaking, alſo in ſome crazy diſpoſitions; and in that caſe the inward air being rarified, ſupplies in a manner the defect of the outward.

Endued only with muſcular Fibres.

Therefore ſeeing thoſe bladdery little Cells receive a greater ſtock of air than that they can be bound preſently to return it all by every turn of expiration; therefore the griſly twigs are wanting to them, and their hollowneſſes are more large of themſelves, that they may be more largely diſtended: but that they may puff out a greater quantity of air upon occaſion, or throw out matter to be coughed out, being endued with muſcular Fibres, they contract themſelves more narrowly, and throw out what is contained within them thoroughly. For the ordinary Syſtole's of the Breaſt, which the relaxation of the Muſcles do partly effect, caſt out perhaps at every turn the whole air from the *Trachea* and *Bronchus*, but not from the little Bladders: for the emptying of theſe as often as need ſhall be, both the cavity of the whole Breaſt is very much ſtraitned, and the ſmall bladdery Cells themſelves are ſtraitned from their proper Fibres being drawn together.

The deſcription and uſe of the Pneumonic Artery.

2. The next Veſſel is the Pneumonic Artery, of whoſe moſt thick branches extended every where to and fro, and with other branches twiſted and complicated together, the frame of the Lungs conſiſts. This Artery iſſuing from the right *Sinus* of the Heart, and inclining towards the *Trachea*, is parted into a right and left branch; which applying themſelves to the like parallel branches of the *Trachea*, do accompany them every where, or rather are ſet under them; for they are planted beneath, and are firſt carried into the greater lobes of the Lungs, and afterwards into all the leſſer lobes: in every of which the little branch of the Artery ſtretched out, ſends out on either ſide more ſlips from it ſelf, which preſently are aſſociated by other bronchial and venal ſlips, and are ſeveral ways complicated; and where the outmoſt ſprigs of the *Aſpera Arteria* depart into circular little Cells, the Arteries being complicated with the Veins (as is diſcovered by the Microſcope) do girt about thoſe little Bladders with their thick branching, and enwrap them like Ivy: from whence we may conjecture, that it is not for nothing that the Blood-veſſels that are any where in the Lungs, do curiouſly wait upon thoſe of the air, and every where inſinuate and intimately mingle themſelves. Surely whatſoever hath been ſuppoſed by others, I ſhall not eaſily believe that this is done for the more exact

mingling

mingling of the Blood and its parts, be they never ſo unlike. For to do that, what need would there be of ſo full an acceſs of air, which in rightly making other mixtures (the more perfect whereof are called Digeſtions) we ſeek as much as we can to keep out? For if the air might freely come and go, the Particles that ſhould be mixed, would moſt of them flye away. And as to that which is affirmed, That the Blood in the Lungs is carried through thoſe ſmall, winding and extreme narrow paſſages only that it may be the better mixed; I ſay, that its being ſo carried is quite contrary to ſuch an intention: for the beſt mixture of any liquor (as alſo of the Blood it ſelf) is made by fermentation; and the liquour to be ſo mixed or fermented, like Wine in a Hogſhead, requires a free and ſpacious room: but its going through theſe ſmall and narrow paſſages like ſo many ſtrainers, ſerves rather for the ſeparation than the mixture of its parts; wherefore unleſs the Blood be exactly mixed in the greater Veſſels, and be there rightly fermented, it does, while it paſſes through the Lungs, leave there the dregs and whatſoever parts are not rightly mixt, and ſo does ſtuff up and very much obſtruct their paſſages; as we may ſee in perſons affected with the Green-ſickneſs, Cachexy, and that ſort of Dropſie called *Leucophlegmatia*, who all have a difficulty of breathing, by reaſon of dregs of the ill-mixt Blood that are left there. Wherefore the uſe of the Lungs ſeems to be this, That the Blood through the leſſer Veſſels, as ſo many rivulets, may as to all its parts lie open to and meet with the nitrous Particles of the Air, and be by them enlivened and accended. The Pneumonic Artery, as alſo the *Aorta* and Wind pipe, hath a muſcular Coat furniſhed with two ranks of Fibres, namely ſtraight and circular; which doubtleſs, when they are contracted, do make the Pneumonic Arteries to beat, and the Blood to be urged and driven ſtill more and more forward. A great many Glandules with a Net of Veſſels lie on this muſculous Coat. The frame and branching of the Pneumonic Artery in ſome one Lobe of the Lungs are expreſſed in the ſecond Table. All the Coats of this Veſſel are drawn diſtinct and apart from one another in the ſixth Table and firſt Figure, and alſo in the fourth Table and ſecond Figure.

The deſcription and uſe of the Pneumonic Vein.

The Pneumonic Vein, having its riſe in the left Ventricle of the Heart, and being divided and variouſly ſubdivided firſt into greater branches, and then, according to the greater and leſſer Lobes of the Lungs, into leſſer, and laſtly into the leaſt of all, is carried above the Weazand, and as it goes on does exactly anſwer to the branching both of the Pneumonic Artery and the Weazand, and goes every where with them as it were cheek by joll; and where the Weazand ends into the little Bladdess, the Veins being twiſted with the Arteries (as was ſaid before) do make as it were a little Net wherein thoſe little Bladders are encompaſſed. The Anatome of the Pneumonic Vein differs little or nothing from that of the *Vena cava* and its branches. All the Veſſels of this kind have four Coats diſtinct from one another.

1. The outmoſt of theſe Coats conſiſts of Fibres that ſeem to be nervous, which perhaps are after a ſort muſcular and are extended ſtraight long-wiſe, (though in no very regular order.) This Coat of the pulmonary Vein is very laxe, and looſe from the reſt of the Veſſel, inſomuch that it may all of it be blown up and very much extended, as if it were a diſtinct Veſſel: Whence one might ſuſpect that this were a peculiar paſſage to carry back *Lympha* or *Serum* ſeparated from the Blood: but it ſeems to be more probable, that this outmoſt Coat is therefore made ſo looſe, that the paſſages might be much diſtended and widened for the return of the Blood now hot and boiling.

The uſe of the venous and vaſculous Coat.

2. 3. Two other Coats (common both to a Vein and Artery) *viz.* the vaſculous, and the glandulous lie under this: the office of the vaſculous is to bring nouriſhment to the part, and of the glandulous to receive and ſend away the ſuperfluous ſeroſities.

The muſcular Coat.

4. The fourth and inmoſt Coat is plainly muſcular, having Ring-fibres, as the like Coat of an Artery hath, which certainly being ſucceſſively contracted after the ſtream of Blood, do cauſe its return to be haſtened, and on occaſion to be ſhortned.

Why there is no Pulſe in the Veins.

But here ariſes a doubt, wherefore, ſeeing the Veins as well as Arteries have contracting muſcular Fibres (which in the latter are pulſifick) and ſeeing both are alike joined to the Heart that beats continually, the Veins as well as the Arteries ſhould not ſtatedly beat according to the conſtant turns of the Syſtole's and Diaſtole's in the Heart? It may eaſily be anſwered to this, *firſt*, that the Arteries have a great deal more of the moving Fibres than the Veins have; and therefore whereas *thoſe* being

being ſtrongly contracted ſucceſſively, do force the Blood along as if driven with a wedge, for *theſe* it ſufficeth that whilſt they are gently contracted behind the ſtream of Blood, they calmly and equally drive it forward, flowing back again of its own accord, and as it were down-hill. But *beſides*, the reaſon hereof ſeems to depend ſomewhat on the unlike or rather inverted conformation of the Veſſels; for the Blood conveighed by the Arteries is driven ſtill from wider to narrower ſpaces, and therefore going along it every where violently diſtends them, and lifting up the ſides of the Veſſels raiſes the Pulſe; becauſe whiles that part of the Artery that is behind the Blood is contracted by its muſcular Fibres, that part which is before it, muſt needs beat being filled with the ſtream of blood guſhing in: but on the contrary, the blood in the Veins returning to the Heart, runs out of leſs into greater ſpaces, or out of rivulets into a more capacious and deep chanel, and therefore glides along ſilently and without the fluctuating of a Pulſe.

The diſpoſition of the blood in the Pneumonic Veins.

The blood in the pulmonary Veins ſeems as much, or more than that within the Arteries to be animated or inflamed anew by the air inſinuating it ſelf every where from the Pipes or little Bladders of the *Trachea*, becauſe in thoſe Veins 'tis firſt changed from a black-purple to a ſcarlet: the reaſon whereof is, becauſe the blood at the extremities of the Veſſels, namely as it paſſes out of the Arteries into the Veins, does every where and moſt of all meet with the particles of the air. And for that reaſon it is, that if any liquour be ſquirted into the Pneumonic Artery, it will not ſo readily and quickly paſs through the Lungs and return by the Vein, as it will do if you make the ſame experiment in any member, or part of the body beſides; yea part of the liquor ſo injected will ſweat through into the Pipes of the *Trachea*, or the ſpaces between the little Lobes, and another part, being turned into a froth, will return very ſlowly by the Veins: which is a certain proof, that while it paſſes through the Lungs it makes a ſtay in the mouths of the Veſſels, and is mingled with the airy particles. The Circulation of the blood through the Lungs hath ſomething diverſe from, or rather contrary to that which is made through the reſt of the body; ſeeing the Pneumonic Arteries contain a black-purple blood, and the Veins a ſcarlet, whereas in all the body beſides the branches of the *Aorta* carry a ſcarlet blood, and thoſe of the *Vena cava* a black-purple. Beſides we may obſerve of the pulmonary Vein, that it does every where in its whole length want valves, except where 'tis faſtned to the Heart. Which appears by this, that when any liquor is injected into its trunk (juſt as it is in the Artery) it preſently paſſes through all its branches without lett. Which ought to be ſo, to this end, that the blood may always, becauſe of the violence of the paſſions, freely every way fluctuate and regurgitate in and about the Heart. Beſides, that the left Ventricle of the Heart might never be overcharged with the blood impetuouſly ruſhing into it, by the inſtinct of Nature the Fibres at the root of the Vein being contracted, its courſe might be inverted and flow back. The deſcription of the Pneumonic Vein as to its utmoſt branching is in the fourth Table and third Figure.

The Lymphæducts added to the aforeſaid Veſſels.

To theſe three ſorts of Veſſels, wherein the air and the blood are conveighed, the Lymphæducts that carry forth a water are joined. A power of theſe diſperſed through the Lungs, wait on the Arteries and Veins. All the branches tending from the ſurface of the Lung towards its original, unite into ſome greater trunks; which, being inſerted into the Wind-pipe, diſcharge thereinto the Lympha that is ſuperfluous from the blood and nervous humour. Indeed there is need of a great many of this ſort of Veſſels in the Lungs; becauſe, ſeeing the blood is hotteſt of all here, is haſtily circulated, and yet can exhale nothing to without by tranſpiration, the Veins can hardly receive all the whole maſs of blood from the Arteries; and the Glandules contain not long what is depoſited in them: therefore there as need of Lymphæducts as ſo many chanels, whereby the ſuperfluous humour might continually be ſent off. If theſe at any time happen to be obſtructed or broken, there often follows a Dropſie of the Lungs or Breaſt, and ſometimes Coughs and Phthiſicks. Theſe lymphatick Veſſels of the Lungs may very well be ſeen, if in diſſecting a live Dog you preſs the top of the Thoracick duct, that nothing may be poured into the ſubclavian Vein: for then the Lymphæducts of the Lungs, becauſe they cannot diſcharge themſelves into the common Receptacle now ſtopt and filled, ſwell much and are very apparent. If ſuch a ſtoppage be made for ſome time in a Dog that hath eat and drunk largely, a milky liquor will ſweat into the Lungs out of the Thoracick duct, the Valves being unlocked: yea and the ſame liquor will paſs through the Lymphæ-

ducts

ducts placed far beneath the Reins, and will render them ſtrutted with that humour, as if abounding with milk. The rough delineation of the Lymphæducts ſpreading themſelves in the ſuperficies of the lobe of a Lung, is repreſented in the firſt Table.

The nervous ſtips diſperſed throughout the Lungs.

5. The laſt kind of Veſſels belonging to the Lungs are the Nerves and their branches, whereof there are many (as we elſewhere intimated) diſperſed every where through the Lungs. Heretofore doubting about the office of theſe, we were induced to think the firſt force, or at leaſt inſtinct of breathing depended on theſe Nerves; becauſe otherwiſe we can hardly conceive, after what manner the motion of the Lungs in breathing, coughing, laughing, and other their actions ſhould be always ſo exactly proportioned according to the ſeveral exigences of Nature. For even as the blood doth more intenſly or remiſly heat and boil up within the *Præcordia*, and as certain contents of the *Trachea* provoke the nervous Fibres, we breathe either quicker or ſlower, and oftimes, though unwillingly, we cough. But beſides there doth occur another and more neceſſary uſe of theſe Nerves: for ſince it is manifeſt, that the Coats of thoſe Veins and of the *Trachea* are every where endued with muſcular or moving Fibres by which they are contracted, it is plain, that the Pneumonic Nerves do convey as well plenty of ſpirits, as inclinations of contraction to thoſe Fibres. And it is very probable from thoſe Nerves convulſively diſtempered, that the Palpitation of the Heart is often excited, as alſo the Aſthma and Chin-cough. We have ſome time ſince delivered the Anatomy or deſcription of the Pneumonic Nerves in our Treatiſe of Nerves, *viz. pag.* 311. ſo that there is here no need to repeat or inlarge. The fivefold Veſſels forementioned being mutual, and many ways accompanied in their diſtribution, as if divided into ſecret Groves with ſmall bladders as in Trenches every where interwoven, when they are complicated and variouſly woven together do conſtitute a fleſhy web, which is the very ſtructure of the Lungs: which moreover appears like a more ſolid *Parenchyma*, in as much the Arteries and Veins being filled with blood are ſtufft up, and the Veſſels of the *Trachea* and Lymphæducts being emptied of the air as well as water, do fall together and ſeem to cloſe. We ſhall the leſs admire the fleſhy fabrick of this Lung wove together out of meer Veſſels and little Bladders, if we conſider the frame of the ſeminal Teſticles to be nothing elſe than a heap compoſed of hollow filaments or ſpermatic Pipes woven together. The deſcription of the Nerves of the Lung, and what relates to the bundle of Fibres whereof it is compact, and to the ſpreading of its branches, are deſcribed in the fifth Table.

The Coats of the lungs, whereof one is ſmooth, and the other rough.

The web of the Lung, as above-ſaid, being weaved together of Veſſels and little Bladders, and divided according to their greater and leſſer branchings into lobes and little lobes, a Membrane wraps them about as a common covering. Of this there are two Coats, *viz.* one outer and fine, which appears like a certain ſubtle texture or weaving together of nervous filaments (as is apparent in moſt other Bowels;) the other more inward, which is both rough and ſomewhat thick, and conſiſting almoſt of meer ends of Veſſels and little Bladders: and by reaſon of the hollowneſſes every where cauſed from theſe, its inward ſuperficies reſembles a Hive of Bees; the forms of theſe are aptly enough deſcribed in the eighth Table. This Membrane of two Coats blown up hath very many and large Pores, inſomuch that if Quick-ſilver be poured into the Trachial branch of one of the leſſer lobes, almoſt filling within the whole Membrane, it will every where burſt out from the Pores. Both the arterial blood and the air beating in this Membrane as againſt a bank, are reflected; the former is brought back by the Veins into the left Venter of the Heart, a certain watry part being ſent away through the Lymphæducts. In the mean while the air is returned back by the ſame paſſages of the *Trachea* by which it flowed in. For continually freſh air ought to be ſuckt in, that it might ſupply nitrous Particles to the Blood; to make room for which the other old air being now weak and uſeleſs, muſt be firſt breathed out. Becauſe therefore both functions are to be performed within the ſame paſſages, it is to be done by alternate turns, firſt the one, then the other. While the air is drawn in, the Lungs are blown up, as if wind were forced into them; and whilſt the ſame is breathed out they fall down, and are narrowly ſqueezed together for the benefit of excluding it; and ſo after the manner of Bellows diſcharge conſtant changes of the Syſtole and Diaſtole. Yet by what impulſe and Organs it is accompliſhed, is worth our labour here to conſider.

The Syſtole and Diaſtole of a Lung.

Therefore upon the whole matter it is manifeſt by common obſervation, the Diaſtole of the Lungs perpetually ſucceeds the opening the Breaſt, and its Syſtole in like manner its contraction; ſo that we may conclude, when the cavity of the *Thorax* being

ing dilated a greater ſpace is yielded to the expanſion of the lungs, the extern air of its own accord leaps into the *Trachea*, whether by reaſon of the Pulſe, or by its own Elaſtic force (for it is all one) and preſently enters into its Trunk, the *bronchia* and all the little bladders, and blows them up; namely for that end, that its nitrous particles may every where occur to the blood, waſhing all parts of the lungs: afterterwards when the breaſt receding from that dilatation, is ſtraitned as to its cavity, even the lung being compreſs'd, falls together by its Diaſtole, and excludes the air even now breath'd in. But truly, becauſe the air doth not of its own accord leap out with that plenty as it skipt in, neither the hollowneſs of the breaſt ſo ſtraitly contracted, that it ſhould mightily compreſs the lungs; therefore all the paſſages of the *Trachea* are endowed with muſcular fibres, which being contracted orderly while we breathe out, they may promote the expulſion of air. Wherefore, that the cauſe of breathing, and the manner of doing it may more plainly be made known, inquiſition ought to be made after what manner, and by what Organs, that interchangeable dilatation and contraction of the breaſt are performed.

Its motion mechanically unfolded.

We cannot enough admire, concerning theſe motions, the cunning artifice of the Divine Creator, evidently adapted unto Mathematical rules; for truly in no other matter doth He more plainly appear ὁ θεὸς γεωμετρῶν. For when both the enlargeing and the ſtraitening of the breaſt ought to be performed by ſome muſcles (to whoſe function it only belongs to contract;) the matter is ſo ordain'd, that the ribs which ſhape out the ſides of the *Thorax* even as of oblong parallel lines bowed towards a Cylinder, are brought one while in a ſquare figure with right angles for the enlargement of the breaſt, and afterwards into the form of a Diamond-figure with ſides unequal, with acute angles for the contraction thereof. What follows from the ſcituation of parts ſo chang'd, that whenas the ſides depart fartheſt from one another, the ends are brought nearer, and ſo *è contra*; and for that cauſe the largeneſs of the ſpace is wont rather to be altered than either augmented or diminiſhed; leſt it may ſo happen about the cavity of the *Thorax*, it is ſo provided againſt by an admirable workmanſhip, that whileſt the ribs aſcend upward for enlarging the breaſt to a ſquare figure, leſt the ends ſhould be ſhortned inward, the *Diaphragma*, which cloſes the bottom, ſwells downward toward the Abdomen; ſo that the *Thorax* may be enlarged as well towards its length as to its depth: on the contrary, while the ribs beneath are brought to ſtraiten the breaſt towards the figure *Rhomboides*, leſt they ſhould depart farther than they ought, the Diaphragma aſcends upwards for that cauſe that the largeneſs of the *Thorax* may be ſtraitened, while we breathe out, according to both dimenſions.

The Muſcles ſerving reſpiration.

What belongs to the muſcles of the breaſt, ſerving as well to the enlargement for ſucking breath, as to the conſtriction for breathing out, the moſt wiſe Creator of Nature hath ordained more and ſundry inſtruments of either function; Therefore truly that the work of breathing being eſpecially neceſſary as to life might be performed inceſſantly and very ſtrongly, ſome of the former order of Muſcles, *viz.* thoſe by which the hollowneſs of the *Thorax* is opened, do raiſe the ribs and afterwards draw them back, even as they are bow'd and more enlarg'd; in which number there are three muſcles to the ſhoulder, one belonging to the loyns, and eleven intercoſtal outward; and another inward muſcle, *viz.* the Diaphragma, depreſſes the bottom of the breaſt, and enlarges its length and depth.

Their function as well in inſpiration;

The aforeſaid muſcles, *viz.* the ſcapular, lumbar, and intercoſtals being alſo appointed with the Diaphragma for the function of breathing, are accurately enough deſcrib'd by many Anatomiſts, but chiefly by *Fallopius*, that here ſeems little need to unweave this web; eſpecially becauſe a more full and permanent knowledge of theſe parts is not wont to be acquired unleſs by frequent diſſections and anatomical inſpection. The four former muſcles being of divers forms, conduce chiefly to ſtronger and violent inſpiration; but the exterior intercoſtals in regard of the ordinary actions of breathing employ their continual endeavours by turns during life, every one of theſe being uniform, with a fleſhy and more thick baſis, being rooted in the bottom of the upper rib are carried by oblique fibres, and broad towards the forepart unto the top of the rib that lyes under, and are implanted to it with a ſmall and tendonous end; whence it follows, thoſe fibres being ſwell'd, and ſhortened towards their root, do lead and draw back the nether rib towards the upper; and ſo while all theſe muſcles are contracted together, all the ribs are raiſed upwards, and altered from oblique angles into direct ones, they render the trunk of the *Thorax* more large, but ſomething

thing ſhorter; which defect that it may be helped, the Diaphragma (which being free before from the Syſtole, is hidden within the cavity of the breaſt) together with the ribs drawn upwards, is extended beneath; ſo that the breaſt, as it were a Drum braced, does become moſt capacious; and in the mean time the lungs, having a more ample ſpace yielded to them, are blown up by the air ruſhing in whereſoever there is paſſage, and fill the whole hollowneſs of the *Thorax* enlarged.

Thus far touching the muſcles ſerving to inſpiration, which ever and anon ceaſing from contraction, the ribs preſently fall down from a direct poſition into an oblique; and the Diaphragma alſo being freed from its extenſion, aſcends into the cavity of the breaſt, or is rather thruſt thither by the bowels of the Abdomen; and ſo by reaſon of the poſition of parts ſo changed, *viz.* the breaſt ſtraitened, and the lungs compreſſed, the act of exſpiration doth ſucceed. Some have determin'd this to be a meer intermiſſion of the other, and onely to proceed from the reſt, or ceaſing of the muſcular motion (by which breathing is performed.) But the declination of the ribs from right angles into oblique, and the aſcenſion of the Diaphragma, is related to be the natural poſition of theſe parts, becauſe they are found in ſuch a ſcituation in dead bodies. I think my aſſent not eaſily owing to this opinion, becauſe ſometimes the function of exſpiration is performed much ſtronger and more violently than that of inſpiration, as in coughing, ſinging, laughing, hollowing, and in other affects whoſe exerciſes are the more difficult labour and more earneſt endeavours of the breaſt. Wherefore there is no reaſon that we ſhould think that ſuch vigorous exerciſes of expiration, ſhould be excited by the meer reſt and ceaſing of the aforeſaid muſcles, but from the motion of others oppoſed to them. Moreover the Muſcles now cited and oppoſite, and ſtraitning the breaſt, ſeem to be required not only by reaſon of their violent exſpiration, but for their ordinary and conſtant ſervice, at leaſt for the poiſing the function of reſpiration: for otherwiſe thoſe other whoſe office it is to enlarge the cavity of the *Thorax*, being ſometimes unmindfull of their task, do it either ſtronger or longer than is convenient; wherefore it is neceſſary they be forthwith admoniſhed by others, *viz.* their Antagoniſts ſubſervient to Expiration, and to be reſtrained in their duty. But the muſcles appointed for the ſtraitning the breaſt, are the *Sacrolumbus*, the Triangular, and inward Intercoſtals, and ſome muſcles of the Abdomen; the uſe and deſcriptions of all which are delivered by many Anatomiſts, and moſt accurately by *Fallopius*. The inner intercoſtal muſcles as they obtain a contrary ſcituation, ſo a contrary function to the outer intercoſtals, which namely is to depreſs the ribs, and to ſtraiten the cavity of the breaſt, by forcing it into the *Rhomboidal* Figure. For we are to obſerve, that the carneous and thicker baſis of each of theſe is implanted in the loweſt part of the nether ribs, and the moving fibres, aſcending from thence obliquely and forward, and dividing croſs-wiſe the reſt of the outward intercoſtals, with their ſmaller and Tendony end are engrafted in the bottom of the upper-rib; hence none need doubt, but that theſe inner muſcles do depreſs all the ribs, or bring them downward: but whilſt theſe ribs are ſo depreſs'd, that the trunk of the breaſt is rendred more ſtrait, theſe inward muſcles (otherwiſe than the outer) do not only incline the ribs downward, but alſo their griſtly or cartilaginous proceſſes. For *Fallopius* hath acutely deſcribed this: *That the outward intercoſtal muſcles do onely fill up the inter-ſpaces of the ribs and not of the griſtles, but the inward fill up both ſpaces.* The reaſon whereof ſeems to be after this manner, affording a moſt delightfull ſpeculation of the *Divine Architect*, viz. while the ribs are brought upwards to the exerciſe of fetching in breath, and are withall drawn back towards the Spine, that motion commencing backward, is performed by the ribs themſelves; which being firſt moved together, the cartilages eaſily diſcharge their function as cords fitted to that purpoſe: wherefore there ſeems little need of the muſcular aid to place theſe in their order; but to put the ribs in action, not onely the intercoſtal muſcles aſore mentioned, but the four other greater ones do continually endeavour it; but on the contrary, that the ribs may be depreſs'd and brought forwards together, the force taking its riſe before, is perſormed by the cartilages as ſo many leading cords, moſt eaſily bending the ribs downwards as far as need requires.

As in expiration.

Moreover to this end, that the cartilaginous appendices of the ribs may be drawn down and nearer one the other for the exerciſe of expiration; not onely the inward intercoſtal muſcles fill as well the intervals of the cartilages as of the ribs, but moreover an entire triangular muſcle is allotted for this function; for this ſpringing beneath from the bone of the Sternon, and aſcending upwards obliquely, is inſerted in-

to the lower Cartilages, which it conſtrains towards its head, and bends the *Thorax* nearer on the other ſide. That is worthy of conſideration, which *Fallopius* hath remarked touching this muſcle, *viz.* whereas it is ſo little and minute in a man, that it may hardly be allowed for a Muſcle, it is ſtretched out in a Dog along the whole bone of the Breaſt, and reaches to all the Cartilages, even thoſe inoſculated into the Sternon of the true Ribs. The reaſon of which difference clearly points at the Divine Providence touching the Fabrick of Animals. For whereas this Animal is born to moſt ſwift and long running, that the blood, while it is more vehemently agitated, may duly be kindled and fan'd, as it ought ſwiftly and ſtrongly to draw in the air, even ſo to expire it; (for that freſh air may be more freely ſuckt in, it behoves that all the old be ſtrongly caſt out and exploded) therefore for the ſtronger diſcharge of this exerciſe (of the which little uſe in a man) this Muſcle of a Dog is allotted a great bulk, proportionable to ſuch a work.

Wherefore the triangular Muſcle being ſmall in a man, is ſtretched out through the whole bone of the breaſt in a Dog.

Hitherto of the Muſcles that ſtraiten the Trunk of the Breaſt: by whoſe proviſion it is manifeſt enough, that the relaxation of the oppoſite muſcles are not ſufficient to this function. But that while the breaſt is conſtrained, the Diaphragma aſcending upwards may ſhorten its hollowneſs, it is not enough that it is releaſed from its contraction, but it is alſo neceſſary, that as ſoon as this ceaſes, the muſcles of the Abdomen being contracted ſqueez together the Bowels, and preſs them upwards, by which the Diaphragma being relaxed, is lifted up and driven higher into the Trunk of the *Thorax*.

The Diaphragma follows the motion of the Abdomen.

From the ſuppoſed reaſons of theſe things we may infer, no leſs endeavours of the muſcles are imployed in the exerciſe of expiration, than in inſpiration: nay rather we may affirm them greater, after this is added, that the Pipes of the *Trachea* and *Bronchii* are endowed with muſcular Fibres (as we have ſhewed) which being only contracted while we expire, do cauſe the air contained within to be caſt out with the greater force. And truly ſo it ought to come to paſs, becauſe the air prevailing with an elaſtic force, doth of its own accord readily enter the pulmonary paſſages, as often as they are ſuffered to be open; but from thence that again it may preſently and thorowly be excluded, there needs a certain force and compreſſion of the parts to thruſt out. For although the inſpiration precede in courſe, yet it is neceſſary that expiration follow immediately after, and be proportioned according to the faſhion thereof; for that it may be great, the turns or changes of this being greater are requiſite. Wherefore in vehement exerciſe of the whole body or of the Lungs alone, that the freſh air may more plentifully be drawn in, all the old air muſt be moved, not only out of the *Trachea* and *Bronchii*, but alſo out of the fartheſt little Bladders every turn or change of breathing out, and expulſed moſt of it: whereas while we draw in the breath only the muſcles of the Breaſt are imployed, the Lungs having reſpite, in ſtrong breathing out both the oppoſite Muſcles and the Lungs themſelves labour.

The labour of Muſcles the ſame in exſpiration as in inſpiration.

Having thus explained the Organs of Breathing, it remains yet to be inquired into, by what inſtinct, being ſtirred up to motion, they ſo repeat perpetual changes of Syſtole and Diaſtole, that one while theſe muſcles are contracted for inſpiration, and another while for expiration, in the mean while the oppoſite muſcles have a pauſe, and are moved by turns, that they mutually give place to themſelves ſucceſſively. From all this in the firſt place it is clear (which likewiſe in another place we have abundantly declared) that the animal Spirits, for the exerciſing the contractive motion of the muſcles, leap from the Tendons into the fleſhy Fibres, and afterwards for their relaxation they recede out of theſe into thoſe. Moreover, whereas the mutual function is twofold, *viz.* ſpontaneous and meerly natural, we have before ſhewed in the former, that the Spirits are brought from the Tendons into the fleſhy Fibres by approaches according to the command of appetite, and to remain within during the action, till they are diſmiſſed by its will; and afterwards return into the Tendons, till they are again commanded forth; inſomuch that the times of their motion and reſt are unequal and uncertain, and variouſly determined at our pleaſure.

The cauſes of the above-mentioned motions.

In the animal function.

But it is far otherwiſe in the natural function: becauſe the animal Spirits are carried out from the Tendons into the fleſh by perpetual turns, or conſtant reciprocation, and a ſhort contraction being made, preſently leap back from the fleſh into the Tendons, and ſo alternately: after which manner the Heart it ſelf, the Organs of the *Trachea* and breathing, alſo the fleſhy Fibres of the Stomach and Guts, unleſs they are otherwiſe limited by reaſon of their objects, are drove on by their conſtant Syſtole and Diaſtole.

And natural.

It

It will be needleſs to repeat here what we have already obſerved in another place touching theſe two kinds of motions, *viz.* that the animal ſpirits of the ſpontaneous moving function are altogether or chiefly diſpenſed from the brain, and the others cauſers of the meerly natural function are diſpenſed from the *Cerebellum*; moreover alſo as the plenty of both ſorts of ſpirits, ſo the very inſtincts of beginning thoſe actions have their conveyance through the Nerves.

The motion of the former ſort ariſeth from the brain, the other from the Cerebellum.

Notwithſtanding here ariſeth a doubt, to what kind of moving function, *viz.* whether ſpontaneous, or meerly natural, the actions of breathing ought to be referred; alſo of what original, *viz.* whether of the Brain or *Cerebellum*, the animal ſpirits appointed to that employment, are. It is manifeſt enough that this function is in a ſort partaker of a ſpontaneous motion, becauſe it is in our power one while to ſhorten its exerciſes, at other times to prolong, and otherwiſe diverſly to alter them, yea ſometimes a little to reſtrain them. Moreover the nerves belonging to its chief moving Organs, *viz.* the Diaphragma and Muſcles of the breaſt, ſpringing from the nerves of the Arms and Loyns, do owe their deſcent to the Brain, and do plainly acknowledge the ſpirits they contain are chiefly ordained for voluntary motions: but moreover on the contrary, this function is ſo far natural, that its organs do reciprocate the conſtant changes of Syſtole and Diaſtole in ſleep, without our notice, and while we wake, we not perceiving it: Moreover although we can for ſome little time ſtop its exerciſe, or at our pleaſure vary it, yet we deny it to be altogether or long ſuſpended: beſides, although the nerves appointed to the muſcles of the breaſt and Diaphragma proceed from the ſpinal nerves, yet theſe latter coming from the branches belonging to the arm communicate in their progreſs with the ſlips of the intercoſtal nerves; moreover, all the other nerves (which belong to the *Cerebellum*) ariſe from theſe, which are ſpread about through the *Trachea* and Lungs.

It is a quære of what kind the actions of breathing are.

From theſe it plainly follows, that the power of breathing is as it were a mixt action, and doth participate of either moving function, *viz.* as well of the ſpontaneous as natural; and that the ſpirits and nerves of either Province are imployed in this duty, which proceed as well from the brain as from the *Cerebellum*; and truely ſo it ought to come to paſs according to the animal government: for although ſome actions of breathing neceſſary for the preſerving life, ought to be conſtant and perpetual, there are yet many other motions of the breaſt and lungs onely occaſional, and to be perform'd at our pleaſure, as may be diſcerned in laughing, crying, ſinging, hollowing, whiſtling, and other ſingular offices of the lungs and wind-pipe; in which works that they may be done ſtrongly, the muſcles conſpire together, and endeavour joyntly. As in violent labours and exerciſes of the whole body, by which the blood being ſtirred up doth want the greater ventilation, the arms being vehemently moved alſo do force the muſcles of the breaſt, and other pneumonic organs, into more ſpeedy motions for a more frequent breathing. And truly for joint labour of this ſort of the Arms and Diaphragma, the nerves ſerving this motion proceed from the nervous branches of them. Moreover, it is provided for this purpoſe, leſt the exerciſes of the body might enfeeble at any time the ſtrength of the lungs, or exceed the order of breathing; for when its organs labour more difficultly, or begin to be weary, the nerves of the Diaphragma do warn the other nerves of the arms, plucking them and as it were admoniſhing of their duty to deſiſt from an over intenſe motion.

It is concluded to be a mixt act.

For whereas the function of breathing is ordained for many uſes, whereof ſome are merely natural, and others ſpontaneous or violent; therefore the ſpirits and the nerves which proceed and have their government as well from the brain as from the *Cerebellum*, ought to be joyned together, and to afford their ſocial endeavours; yet on that condition, and as it were by mutual agreement, that one give place to the other by turns for the diſcharging all works chiefly neceſſary, or convenient, and do mutually obey. From the pneumonic nerves, the inſtinct of ordinary breathing or meerly vital beginneth, and is preſently communicated to the nerves of the Diaphragma, and from thence to all of the *Thorax*; ſo that preſently all the moving parts agree together in the action, and cauſe the Syſtole and Diaſtole of the breaſt in ſuch ſort as are required to the preſent ſtate of the blood; notwithſtanding on the contrary, as to other actions of breathing, whether ſpontaneous or violent, it ſeems to have them alſo, *viz.* the inſtinct or firſt force of theſe, beginning one while from theſe muſcles, another while from them is preſently communicated to all the other Organs; ſo that it is called upon by a working conſort of all together ſooner than the twinkling of the eye, for the performing the deſigned acts of breathing.

The nerves of the lungs ſome rulers of the natural motion, and others of the voluntary.

Both do alternatly obey one the other, and agree in their office.

What

What we have hitherto declared about the Organs of Breathing and their functions and uſes, that they may more clearly be manifeſt, it ſeems to be material to expoſe to your view the forms of ſome of their chiefeſt parts deſcribed to the life, together with the explication of their Figures: yet it ſeems proper firſt to inſert a few things concerning the Lymphæducts and interſpaces of the Lobes omitted in the former Diſcourſe.

The moſt renowned *Malpighius* firſt diſcovered theſe little Lobes of the Lungs and their interſpaces; but to what uſes they ſerve he hath not clearly enough ſhewed. Haply it may ſeem that theſe little places and empty ſpaces within the Lungs, are certain receptacles of the air (that there may be a larger ſtore of it.) Notwithſtanding it is evidently manifeſt upon experiment frequently made, that the air pufft into the Pipe of the *Trachea* (which is the only entrance into the Lung) doth not enter or blow up theſe interſpaces of the little Lobes: notwithſtanding if you blow into the hole of any of theſe interſpaces, immediately all theſe ſpaces pufft up do ſwell in the whole lobe of the Lungs, ſo that all the little lobes diſtinct by great interſpaces, will appear with a pleaſant proſpect; as is expreſſed in the ſecond Figure of the third Table. Moreover the Lymphæducts creeping through the ſuperficies of the Lungs, ſeem to be every where included in little Membranes covering thoſe interſpaces, and to end in them. But as the lymphatic Veſſels are all furniſhed with little valves, ſo thoſe which appertain to the Lungs are furniſhed with almoſt infinite; as is to be ſeen in the warm large lobe of an Ox, and expreſſed to the life in Tab. 1. d, d, d, d.

The interſpaces of the little Lobes have paſſage one into the other, and from thence into the Lymphæducts.

That I may dare to conjecture concerning the uſe of theſe things, it is probable, that thoſe cavities intercepting each little lobe, do receive the vapors flowing copiouſly every where from the blood being kindled, (when they cannot any where elſe be better thruſt down or ſeparated) which ſweat through their ſlender Coats into theſe cavities out of the ends of thoſe Veſſels, and thence being forced further, they are condenſed into water to be carried out of the Lungs through thoſe appropriate Veſſels: moreover leſt the Lympha's cauſed from vapors within thoſe paſſages, and ſo being made thick, ſhould whirle again back into the Lungs (which would bring great prejudice to them) the thickeſt obſtacles of the valves do hinder. For I have frequently admired what becomes of the vaporous ſteams which inceſſantly flow in great plenty, and ſometimes moſt impetuouſly out of the blood burning ardently in the *Præcordia*. For although very many of them flye away through the paſſages of the *Trachea* together with the air while we breathe, notwithſtanding one only way of paſſage or particular ſluice doth not ſuffice to them, from every place breaking forth: wherefore theſe little places or empty ſpaces are every where placed, that they may receive thoſe vapors ſhut up in the Lungs, and may drop out the ſame immediately condenſed through the Lymphæducts, as if through ſo many noſes of an Alembick.

Which therefore is done, that the vaporous ſteaming of the blood being received by the interſpaces, and condenſed into water in the Lymphæducts, may be conveyed out.

The lymphic Veſſels having their paſſage out of the Lungs incline towards the paſſages of the *Thorax* with their numerous branches, and are for the moſt part mingled with them; but they climb upon the *Oeſophagus* in their way, as alſo the trunks of the *Trachea* and the *Aorta*, and do loſe many ſlips in them by a various inſertion; likely for this cauſe, that ſome of the lymphatic humor may be beſtowed for making ſlippery the ſides of thoſe Veſſels.

The progreſs and diſtribution of the pulmonary Lymphæducts.

The Explication of the Figures.

THE firſt Table ſhews one entire lobe of the Lungs, upon whoſe ſuperficies the Lymphæducts are ſeen ſpread through every where.

Tab: 1

A. *The Orifice of the* Trachea *being cut lying in the midſt of the Veſſels.*
B. *The Orifice of the Pneumonic Artery lying under.*
C. *The Orifice of the Pneumonic Vein placed above it.*
d, d, d, d. *The outer Lymphæducts ſpread abroad through the ſuperficies of the Lobe.*
e, e, e, e. *More Lymphæducts meeting on the back of this Lobe, from whence they paſs into the Thoracick ducts.*

The ſecond Table ſhews one lobe of a Sheeps Lung cut in the midſt, that the upper part (wherein is the trunk of the Vein) being removed, and the trunk of the *Aſpera Arteria*

Arteria laid by it ſelf, the branching of the Pneumonic Artery is ſhewn throughout its whole frame, *viz.* through the ſmall and leaſt little Lobes. All the paſſages of this, *viz.* the ſlips and twigs how ſmall ſoever, being filled and coloured by any liquid thing caſt into them, are drawn to the life.

Tab II

A, A, A, A. *The nether half of the Lobe divided, containing the branching of the Pneumonic Artery.*
B, B, B. *The Trunk of the Pneumonic Artery belonging to this Lobe.*
C. *A hole from whence its other branch was cut off and removed.*
D, D, D, D. *The Trunks from which its other branches (becauſe they could not be expreſſed in this Table) were cut off.*
E, E, E, E. *The arterious ſtems thereof ſtretch forward into length, the ſide-branches on both parts ſtretcht out into the right and left ſide.*
F, F, F, F. *The twigs and leſſer ſlips, which are every where intermingled with the like from the Veins and Bronchials; and at laſt woven together with the Veins every where encompaſs the orbicular little Bladders, and bind them as it were in cluſters.*
G, G, G, G. *The Bronchial branches, which being cut from the ſtem of the* Trachea *laid aſide, and entring ſecretly into this lobe of the Lungs, are accompanied with branches that bear blood.*
H, H. *The ſtem of the* Trachea *appertaining to this Lobe, which lay upon the Pneumonic Artery, cut and laid aſide.*
f, f, f, f. *The ſtems of the Bronchial branches, which are immerſed partly in this portion of Lobe deſcribed* G, G, G, G, *and are partly diſtributed in the other half cut off.*

The firſt Figure of the third Table expreſſes one lobe of the Lungs, according to the branchings of the *Aſpera Arteria* divided into leſſer and leſs lobes, the twigs and ſlips of which Veſſel being filled by a liquid firſt injected, and afterwards ſeparated from among themſelves towards the little lobes, are alſo drawn to the life.

Tab. III. Fig. 1.

A. *The Trunk of the* Aſpera Arteria *being cut from the reſt of his body.*
B, B, B. *The inner part being cut open, that as well the holes leading into all its branches, as its ſtraight muſcular Fibres, are viewed together.*
a, a, a. *The above-mentioned holes leading into the every where ſtretched out branches.*
b, b, b. *The ſtraight muſcular Fibres, upon which the other circular do lye.*
C, C. *The upper part of this Tracheal ſtem being whole or ſhut, that the Ring-like Griſtles might appear.*
D, D, D, D. *The branches of the* Trachea *conſtituting the leſſer lobes are whole and ſhut, that the Ring-like Griſtle may alſo appear in them.*
E, E, E, E. *The like branches being cut open, that the holes and ſtraight muſcular Fibres may be ſeen together.*
F, F, F, F. *The trunks from which the Tracheal branches being cut off are removed, that there may be ſpace afforded to the reſt, when cut open.*
G, G, G, G. *The ſecondary little lobes hung upon the trunks of the* Bronchii *as grapes, which alſo may be divided into leſſer lobes, the more inward paſſages of all which paſs out of the* Bronchii *into the little bladdery Cells.*
h, h, h, h. *The Veſſels bringing blood crawling over the ſuperficies of thoſe little lobes.*

The ſecond Figure of the third Table expreſſes a part of the pulmonary lobe, wherein the membranous interſpaces being blown up, all the little lobes appear in their proper figure, and do ſomewhat repreſent the leaf of Polypody.

Fig: II

A, A. *A part of the* Aſpera Arteria *complicated with the other Veſſels, to which trunk made up of all thoſe, the little lobes grow like leaves of a tree.*
b, b, b, b. *The little Lobes themſelves.*
c, c, c, c. *The Veſſels bringing blood creeping through them.*
d, d, d, d. *The membranous interſpaces of the little lobes, which alſo are covered with* e, e, e, e, *the Veſſels bringing blood.*

The fourth Table expreſſes as well the Veſſels belonging to the *Trachea* as thoſe bringing blood, ſeparate and diſtinct one from another, conſtituting one little Lobe, as alſo the peculiar framing of every one of them.

The

The firſt Figure repreſents the ſeparating into divers parts the Tracheal branch diſtributed into one little lobe, and the branching into Pipes and orbicular little bladders.

A, A, *The trunk of the* Aſpera arteria, *in the ſuperficies whereof the ring-like griſtles do appear.*

b, b, b, b, *The leſſer branches going from that trunk, wherein alſo little Rings appear.*

c, c, c, c, *The paſſages of thoſe branches into orbicular little bladders, which ſeem like the cluſters of Grapes.*

d, d, *The Veſſels bringing blood, diſtinct from the Pneumonic which cover the Trachea, and ſerve to nouriſh it.*

The ſecond and third Figure ſhews diſtinctly the equal branchings of the Artery and Pneumonic Veins within the ſame little Lobe; both which being complicated with Tracheal Veſſels, do for the moſt part make up the texture of the pulmonary frame.

The fifth Table ſets forth the pulmonary Nerve more accurately deſcribed by the aid of a Microſcope; ſo that it plainly appears that the Trunk is as it were a bundle of innumerable little Fibres bound together; moreover its Trunk, while it creeps into the lungs in the likeneſs of Mother of Time, doth ſpread the various little ſprigs every way.

Fig. 1. reſembles a part of the nervous trunk cut away, one end whereof being opened and lookt on by a Microſcope, ſeems to unfold it ſelf almoſt into innumerable little fibres.

A, *The trunk of the Nerve.*

a, a, a, a, *The little Fibres divided from one the other about the end cut off, and ſpread abroad.*

The ſecond and third figure do ſhew ſome fibres as well of the trunk as of every branch, and moreover the ſlips of the little twigs from divers ſtemmes often repeated.

B. *The chief trunk.*

b. b. b. b. *The little fibres about the extremity cut off explicated.*

c. c. c. c. *The little twigs ſpringing from the bundles of the little fibres.*

The ſixth Table firſt ſets forth the anatomy of the Artery bringing blood drawn in apt figures, which we have deſcribed in a late treatiſe.

The firſt and upper figures hereof, repreſent the four diſtinct Coats of that Veſſel, *viz.* the nervous, muſcular, glandulous, and the vaſculous.

1. *The firſt inward nervous coat*, which perhaps is ſomewhat muſculous, conſiſting of ſtreight or long fibres, which being contracted ſhorten the Pipe of the Artery.

2. *The coat properly muſcular*, conſiſting of a heap of ſmall circular fibres, which when they are contracted ſucceſſively under the ſtream of blood, do make its circuit to be ſhortened. It is from the motion of theſe that the arteries beat.

3. *The glandulous coat*, which (like that in the guts) being placed over the muſculous coat, is weaved together of very ſmall and moſt numerous glandules.

4. *The outward vaſculous coat*, which variouſly folded together and wreathed, of Veſſels bringing blood, and with ſlips and nervous fibres, ſeems like a certain little net.

The *ſecond and lower figures* of the ſixth Table, do ſhew the anatomy of the Vein, or its four coats expreſſed in fit places; which Coats do appear entire as ſucceſſively taken one part from the other (beginning outmoſt.)

I. *The outward coat* conſiſting of nervous fibres (which perhaps are ſomewhat muſcular) and as it were ſtreight or ſtretch'd out in length, although not orderly.

II. & III. *The vaſculous and glandulous coat*, which are the ſame as in an artery.

IV. *The moſt inward muſcular coat*, conſiſting alſo of circular fibres, as in an artery, which being contracted behind the ſtream of blood, haſtens its returning courſe.

The ſeventh Table expreſſes the diſtinct Coats of the *aſpera arteria*, and ſeparated one from the other.

The firſt figure ſhews the moſt inward Coat, endowed with ſtreight or long muſcular fibres.

The ſecond figure deſcribes the glandulous coat, and the third figure the vaſculous coat (whhic

(which are almoſt the ſame as in the veſſels bringing blood, and alſo in the Guts.)

4. *The fourth figure expreſſes the outward coat* (which is partly cartilaginous, and partly muſcular.) The tranſverſe or annular fibres hereof do fill up and weave together the interſpaces of the Cartilages.

The eighth Table ſhews a part of the outmoſt pulmonary Coat covering over its whole frame, moſt finely and curiouſly deſcribed by the help of a Microſcope.

The firſt Figure ſhews a portion of the above-mentioned coat, which partly by reaſon of the extremities of Veſſels of every ſort ending in it, ſeems pricked full of holes as it were, and partly from the complications of the veſſels bringing blood, which like the twining ſprigs of Vines gird about the orbicular bladders, is diſtinguiſhed into many irregular *Area*'s.

The ſecond Figure repreſents a part of the outermoſt membrane ſeparated from the cluſters of veſſels pull'd off, and without any *Area*, onely markt with little holes as it were with ſmall pricks.

The third Figure expreſſes one ſingular *area* of the Coat above mentioned, augmented in largeneſs by the help of a Microſcope.

SECT. I. CHAP. II.

Of the ſundry kinds of Breathing hurt, and their cauſes, with the accounts of their Symptoms.

HItherto we have ſtrictly viewed the Lungs, and the parts any way ſerving their motions, and conſequently the vital function; which being many and different, and the proviſion of the Organs as many very accommodate to breathing; ſo the ſame are many wayes in hazard to be perverted or vitiated, upon ſundry occaſions. Truly a Watch framed with the greateſt artifice with a Spring, with wheels plain and toothed, with chain and ballance, is not more prone or eaſie to be obnoxious to depravation than this Pneumonic machine of the breaſt, through which by ſucking in air we preſerve the vital flame of the blood with its motion and heat. For whereas the veſſels of the lungs belong to the function of breathing, *viz.* the *Trachea*, with the *Bronchii* and little bladders; alſo the heart with arteries and veins, beſides which there are nerves with fibres as well muſculous as nervous, Lympheducts and Glandules; alſo the contents of theſe Veſſels, *viz.* Air, the old and freſh blood, with its *Serum*, the Lympha, and the animal Spirits; any fault happening in any of theſe doth oftentimes diſcompoſe the whole Pneumonic function. Nor leſs alſo the moving Organs of the breaſt, *viz.* the muſcles with the Diaphragma, and the nerves appointed to their uſe. And likewiſe ſometimes the animal ſpirits before they enter into thoſe nerves, being ill diſpoſed, often cauſe great diſorders in breathing.

The organs of breathing being hurt, the breathing is hurt alſo.

When the chief function and uſes of the Lungs have been to convey the blood and air through the whole frames of the parts and their inmoſt receſſes, and every their ſmalleſt paſſages, and every where to mingle them; namely for that purpoſe, that the venal blood returning from its circuit, and diluted with freſh juice, and thereby crude and as it were half extinct, may as well be more perfectly mix'd and wrought together, as more effectually kindled afreſh in all its parts by the nitrous air; from hence the chief faults about this buſineſs or function of the Lungs do moſt of all conſiſt in theſe two things. Firſt, that the blood hath not due paſſage through the *Sinus* of the heart, and the pneumonic veſſels: And ſecondly, becauſe the Air is not drawn in and breathed out in a due manner into the *Trachea* and its paſſages. There are two parts of either of theſe: For firſt as to the paſſage of the blood, ſometimes the fault is caus'd within the right *Sinus* of the heart, or the pneumonic Arteries; and alſo ſometimes cauſed within the pulmonary veins, or the left Ventricle of the heart: Secondly, as to the Air, the failure is chiefly in inſpiring and exſpiring; although each function offends ſometimes equally. There are divers accidents of each, and many cauſes and ways of its being done, whereof we will here briefly touch upon the chief.

The uſes and ends of breathing which uſe to be hurt.

The defects and failings of the Lung in its office.

Firſt in reſpect of the blood.

Therefore firſt, when the blood doth not duly paſs through the right Ventricle of the Heart and the Pneumonic Arteries, either it happens by its own fault, or by the fault of thoſe paſſages, and ſometimes by the fault of further paſſages. For ſometimes the ſtream of blood ſtops in the nether region of the *Præcordia*, by reaſon of obſtruction in the other; moreover, ſometimes the defect or fault of the air breathed in ſtops the free paſſage of the blood.

The opinion of the famous Sylvius *concerning the blood fermenting in the Lungs.*

What relates to that fault of the blood, when it paſſes not quick enough through the right *Sinus* of the Heart and Pneumonic Arteries, the opinion of the Renowned *Sylvius* ſhould here be diſcourſed, but that it would be too tedious, and from our purpoſe. For he ſuppoſes, *The deſcending branch of the venal blood, moiſtned with chyme together with the lymphatic humour returning from the whole body, hath the nature of an acid-ſweet ſpirit; and in the mean time its branch aſcending impregnated with choler from the bladder of the gaul mixt into the maſs of blood, does participate of an oily volatile ſalt; and ſo by the meeting together of theſe ſomething contrary to themſelves, a gentle and friendly contention or boiling is ſtirred up in the right ventricle of the heart, in which and for which the fiery parts lurking and being ſhut up in each, being freed and ſet at liberty, do rarifie the chyle and blood, and ſo change and alter them, that they exerciſe the function of life and heat as well as motion and nouriſhment through the whole body.*

Which ſeems not likely to be true.

There are many reaſons why I aſſent not to this ingenious and neatly-framed Hypotheſis. For beſides that many do far otherwiſe determine about the origine and diſpenſation of Choler, and ſo not without ſtrong reaſons and experiments are thorowly perſwaded, (by eye-ſight) that there is not any ſuch boiling up of the blood of a different quality, and ſtriving or contending in the right ventricle of the Heart: Our judgment continues ſtill, as it hath been, that both ſtreams of blood, waſhed thorowly with the freſh chyme, do conſiſt altogether of one kind; and for that cauſe the milky Veſſels of the Cheſt carry about part of the Chyle ſo long a journey, which they pour into the deſcending trunk of the *Vena cava*, juſt as the meſeraick Veins pour the other part into its aſcending trunk: alſo that the lymphatic humor together with the Chyle is poured into the ſubclavian Veſſels, ſo that it may very commodiouſly be reduced into blood; neither truly doth there ſeem need of other or more paſſages. Moreover we determine that that humor rightly conſtituted doth agree with, and is eaſily aſſimilated to the maſs of blood, as well as the Chyle it ſelf made ſweet, without any contention raiſed in the heart. But if the lymphatic humor returning from the Brain and nervous kind as well as from the Glandules, degenerate from its due temperature, and contract a ſowreneſs (as it often comes to paſs) then being re-infuſed into the venal blood it overcomes it, and it precipitates it into ſeroſities, and from thence great ſtreamings of urine do enſue. Moreover we have ſhewed elſewhere, that the Diabetes is provoked from ſuch a cauſe. But ſuch a flux of the lymphatic humor is ſo far from exciting a greater boiling up of the blood in the right ventricle of the Heart, that rather on the contrary from thence often chilneſs of the whole or ſtiffneſs, with a weak Pulſe, and ſometimes ſwoonings or convulſive fits are provoked, accompanied with a plentiful and pale urine. The reaſon whereof without doubt is, that then the clear humor flowing from the brain and nervous parts, turns the blood into ſeroſities, and cools it by too much diluting; and for that cauſe the animal ſpirits being deſtitute of their vehicle, either faint or run into irregular motions.

Our opinion hereof.

The pneumonic circulation of the blood is ſtopt ſometimes by the fault of the heart it ſelf.

But truly as we altogether deny an Elaſtic effervеſcence of the blood in the right Ventricle of the Heart from contention of diſſimilar parts; ſo as often as from thence the blood is not caſt out into the Lungs after a due manner, we determine it to happen not ſo much from the proper fault and defect of the blood it ſelf as from the animal faculty. For if the ſpirits actuating the moving Fibres of the Heart, either grow weary, or are forced into convulſive diſorders; for that cauſe the Heart beating in diſorder, drives out before it the blood either infirmly or irregularly.

2. Sometimes by the fault of the blood.

3. Sometimes by reaſon of paſſages obſtructed.

But that the blood iſſuing out of the Heart doth not always with expedition paſs through the Pneumonic Arteries, that ſometimes happens from its own proper fault, and alſo ſometimes from the paſſages obſtructed, and alſo by reaſon of other cauſes. The blood it ſelf in a double reſpect hinders its own paſſage through the Lungs, *viz.* either offending as to its kindling, or as to its temperature. There are ſundry accidents of either of theſe. For firſt, even as the blood is more or leſs kindled than is convenient, it is hindred or obſtructed in the pulmonary circuit: if at any time the watry, earthy, or fixt ſaline parts are predominant in the blood, the ſpirit and ſulphur being conſumed or brought low; by reaſon hereof its liquor being not well or leſs kindled by the nitrous air, is not eaſily rarified in the pulmonary paſſage, and ſcarce paſſes through them

them like a flame of its own accord, but it ſticks ſtill in its paſſages, heavy and muddy, and creates much trouble and labour to the Heart whereſoever it is circulated. Hence as often as the blood is a little more plentifully forced into the *Præcordia* by the quicker motion of the whole body, or of its parts, the Heart and Lungs labour hard for its driving about, and that with the utmoſt endeavours. And in this caſe it is probable, that the blood carried more rapidly into the right Ventricle of the Heart, doth ſomewhat ſtagnate; becauſe it cannot preſently be carried into the paſſages obſtructed before it. Moreover from this cauſe thoſe grumous or fleſhy concretions called the *Polypi* of the Heart ſometimes ſeem to ariſe. Hence both in the Pica, Leucophlegmatie, Dropſie, and inveterate Scurvy from the quicker motion of the body ariſes difficult and painful breathing.

The blood hindred in the Lungs ſometimes becauſe not kindled enough;

2. Sometimes the blood is too much kindled, and breaking out almoſt into a flame, and being above meaſure expanded, it can ſcarce be contained in the pulmonary paſſages (which it very much blows up and extends) but endangers them to be inflamed or kindled; wherefore leſt it ſhould tarry longer in them, the *Præcordia* beat with moſt frequent and ſtrong endeavours, that the blood ſo over-much kindled might be ventilated and circulated: for otherwiſe it being carried within the Lungs, and inflaming them all over, would quickly deſtroy the vital function.

Sometimes too much.

Beſides theſe things which concern the kindling of the blood, there are other faults as to its temperament or mixture, by reaſon of which it leſs freely or expeditely is conveyed through the pneumonic paſſages. For when its conſiſtence is either too laxe or too cloſe, it will not eaſily paſs through the ſmall paſſages of the Lungs; but oftentimes is in hazard to ſtick and ſtagnate in them, and alſo run out and be extravaſated.

It is alſo ſtopt through its temperament being vitiated.

The blood being in a diverſe manner made looſe in its conſiſtence, either depoſites its Serum, or its dregs, or its putrefaction in the Lungs; which being lodged in the receſſes of the Veſſels, or affixed unto their ſides, do variouſly ſtop or pervert the courſe of the blood.

1. The diſſolution of blood, which is moſt commonly injurious to the Lungs, (although not very dangerouſly) is wont to happen, for as much as the ſeroſities being unapt to be contained within the maſs thereof, and when they are not preſently ſent away by ſweating or urine, they ſeparate from the blood within the Lungs; and ſo boiling up, and breaking out from their proper veſſels, do as well diſturb and ſtop the paſſage of air, as that of blood; ſo that for the ſake of expelling thoſe ſeroſities and continuation of the circulation of blood, the Lungs are provoked into a frequent and very troubleſom Cough. What the formal reaſon of this Cough is, and the manner of its being brought about, we ſhall declare hereafter.

When the blood is too much looſened in its conſiſtence.

Though there are many cauſes and occaſions, by which the ſerous liquor, departing from the looſned conſiſtence of the blood, flows out abundantly into the Lungs; yet for the moſt part it happens from one of theſe three, *viz.* firſt and moſt frequently, becauſe the Pores outwardly bound up by cold, caſt back the ſeroſities which were wont to be ſent away by perſpiration, into the maſs of blood; which compel it preſently to boil up, and caſt off the ſerous ſuperfluities in the Lungs. From this kind of cauſe Catarrhs and Coughs frequently ariſe, inſomuch that the beginning of every cough by the vulgar is always imputed to ſuch an occaſion, to wit, catching cold. 2. The drinking of ſharp and thin liquors, as Cider, Rheniſh Wine, white Wine, *Paris* Claret commonly cauſes to ſome a Cough, or catarrhal diſtemper: the reaſon whereof is, for that the blood, weak in temperament, is preſently diſſolved and precipitated into ſeroſities like milk by ſowre things caſt into it, which flow plentifully from the mouths of the inward Arteries. I have experimented this upon my ſelf yearly, when in the Summer ſeaſon (when the blood abounds with ſulphur) I have drank Cider and tartiſh Wines ſafely, yea frequently to advantage, the ſame in winter (when the blood is prone to ſowreneſs) but moderately taſted of, do preſently provoke a Cough. 3. There is another cauſe of this ſerous inundation flowing out upon the Lungs, *viz.* when the *Lympha* watering the nervous and ſolid parts, doth ſuddenly ſuffer a flux; and for that cauſe it ſtreams back into the blood out of the Fibres and Glandules, and other paſſages and receptacles; whoſe liquor it preſently diſſolves, and precipitates into ſeroſities, which often infeſts the Lungs.

Why it lodges the Serum in the Lungs.

The various cauſes and ways of doing it.

For this reaſon a ſudden and troubleſom Cough frequently accompanies convulſive diſtempers, which being commonly called a vaporous Cough is aſcribed unto vapours. Moreover in great alterations of air, eſpecially when the ſeaſon varies from dry into moiſt, and the volatile and fixed ſalts do thereby melt, the Cough and Catarrhs increaſe very much.

Neither doth the ſerous liquor only, but alſo many other humors or recrements of the blood lodged in the Lungs frequently ſtuff up their paſſages; ſo that by obſtructing both the paſſages of air and of blood, they cauſe difficult breathing or a cough. This is every where perceived in ill-habited bodies, alſo in Gluttons and Drunkards, and others leading an inordinate and ſlothful life. Wherefore Foot-men uſe a thin and ſpare diet, that they may have their Lungs free from the filth and recrements of the blood. I have obſerved ſome melancholy perſons, the aduſt *fæces* abounding in the pulmonary paſſages, to have voided blackiſh ſpittle like ink; alſo others cholerick, and inclining to the Jaundice to void yellow, and ſometimes very bitter, as if it had been meer choler.

The blood diſſolved alſo lodges in the Lungs infections that cauſe corruption.

3. Moreover many inſtances manifeſtly declare, that ſometimes the Lungs are tainted by the corruption and putrefaction of the blood. For the blood, toucht with an infection or a peſtilent or venemous contagion, begins to be corrupted, and withdraw into clotted and corrupted portions; from thence the Lungs undergo the chief taint, from whence the greateſt danger of life is threatned. This is too well known in the Meaſles, ſmall Pox, Plague, and malignant Feavers, for me now to undertake to explicate it: by which maladies as often as the ſick die, it ſeems to come to paſs, either becauſe the blood clodding in the veſſels of the Heart or Lungs, obſtructs the way of its proper courſe, ſo that preſently its influx into the Brain is hindred, or becauſe the corruption of the blood, affixt to the ſides of the pulmonary paſſages, cauſes a Phlegmon as it were; and therefore provokes a moſt troubleſom cough or difficult breathing, and frequently bloody ſpittle. So much for the impediments of the circulation of the blood, which happen in the Lungs by reaſon of the maſs of blood too much diſſolved, and apt to depart into parts and portions, (which being there left obſtruct their paſſages.)

The blood is hindred in the Lungs by reaſon of the too thick conſiſtence of the blood;

There remain other no leſs prejudices to the *Præcordia*, which proceed from the conſiſtence of the blood too much bound up together, and ſending nothing from it ſelf: by which a burning Feaver, Pleuriſie, or Peripneumony ariſe.

As is perceived in a Feavr.

In the former diſtemper the blood being more ſulphureous than it ought, and therewithal being thick, is not diluted enough with its Serum; and thoſe particles of it contained within it ſelf, it puts away with great difficulty: wherefore it is more plentifully kindled in the Lungs; and when it paſſes through the paſſages hereof with more difficulty, by reaſon of its greater boiling, and of its thickneſs, the Heart beating quick and moſt vehemently, endeavours its circumpulſion with all its might; notwithſtanding from its greater flame growing hot within the *Præcordia*, heat and a moſt troubleſom thirſt, with roughneſs, and as it were a certain parching of the tongue ariſes.

In a Pleuriſie and Peripneumony.

In the other kind of diſtemper, *viz.* a Pleuriſie and Peripneumony, the blood is alike thick, but leſs ſulphureous, and inflammable; wherefore it doth not participate of ſuch a burning: yet by reaſon of its thickneſs it doth not ſo eaſily and quickly paſs through the Cheſt or Lungs, is frequently extravaſated, and ſticking to the interſpaces or ſides of the paſſages, cauſes obſtructions, and ſoon after an inflammation, to which pain often ſucceeds with bloody or diſcoloured ſpittle. We may obſerve in blood-letting in theſe kinds of diſtempers, that after it hath ſetled, its ſuperficies is covered with a little whitiſh skin, or otherwiſe diſcoloured, but always with a thick and viſcous: the reaſon whereof is, that the blood, when it doth not ſend away in the circulation its old particles, nor doth admit enough of new, it is thickned with a continual boiling, and like boiled fleſh changed from a bloody colour into a whitiſh; in which ſtate, paſſing with difficulty through the ſmall paſſages of the veſſels, it is in danger to be extravaſated, and eaſily provokes a Pleuriſie or Peripneumony.

The blood is hindred in the Lungs by the fault of the heart.

Beſides theſe ſtoppages of the blood, cauſed by its own fault, while it paſſes through the *Præcordium*, there are alſo other impediments, which happen either by the defect of the Heart, or its paſſages, or by the fault of the air inſpired. By what means and for what cauſe the Heart offending in its motion, forces the blood from its right ventricle through the Lungs into the left irregularly, we have clearly ſhewn in our late Tract of Cardiac Diſtempers: to wit, that muſcle ſometimes labouring for want of ſpirits doth not vigorouſly and ſtrongly enough perform its beatings. For when in corporal exerciſe the blood more plentifully than uſual, is forced from the *Vena cava* into the ventricle of the Heart; if this cannot firmly contract it ſelf, labouring according to its ſtrength, it cauſes frequent and weak Pulſes: moreover to help this, as well the Pneumonic Arteries, as others in fundry parts of the body, which drive about the blood every way, do cauſe frequent and inordinate contraction. Thus I have obſerved in Virgins afflicted with the Green-ſickneſs, and in other cachectical bodies, from a quick motion of

1. When the ſpirits thereof are wanting.

the

the body, not only a palpitation of the Heart, but in the neck, temples, and other places the Arteries to have beaten irregularly. Neither is it the want of ſpirits only, but their diſorder is ſometimes the cauſe that the *Præcordium* doth with leſs ſtrength convey the blood; for ſometimes the ſpirits, the inmates of the Cardiacal nerves, being ſtirred up by an incongruous conjunction, and affected convulſively, do impreſs their irregular contractions upon the Heart or Arteries, whereby the progreſs of the blood is ſeveral ways perverted or hindred, as it often happens in Palpitation of the Heart, Trembling, intermitting Pulſe, and other the like paſſions.

2. Becauſe moved inordinately.

3. The pneumonic proceſs of blood is variouſly ſtopt, becauſe the paſſages are not open enough: which impediments happen as often as the Pores or thoſe paſſages are either ſtopt or broken. Of the former there are two reaſons, *viz.* ſometimes the ways are ſhut, for as much as the paſſages of the veſſels, contracted by the carneous fibres, are brought nearer one another; as we have elſewhere ſhewed, doth ſometimes happen in Palpitation of the Heart, and a convulſive Aſthma. The affects of which ſort, by reaſon of the ſtream of blood ſhut within the *Præcordia*, difficult or hard breathing, a ſmall Pulſe, and chilneſs of the whole body are wont to accompany. Moreover ſometimes the courſe of the blood is ſhut up, becauſe the paſſages of the veſſels are preſſed together by a body, or by ſome humor from without: wherefore when the little Cells or bronchial Pipes (as is uſual) are filled with a viſcous flegm, purulent matter, or blood extravaſated, as the free paſſage of the air is hindred in them, ſo alſo the paſſage of blood is ſtopt in the veſſels adjoining. On the ſame account come tumors, little ſwellings, worms, alſo ſtony, ſandy, and curdly concretions, and others of another kind are in diverſe manners excited; the chief whereof we ſhall touch on hereafter. Moreover we ſometimes ſee the canals as well of an Artery as of the pneumonic Vein, made very bony in ſome part, and their ſides ſo compreſſed, that a very ſmall chink remains for the blood to paſs. Not long ſince we diſſected a young man who died by reaſon of an ill formation of the pneumonic Vein, in whom the trunk of this veſſel growing ſtony near the juncture to the heart, did ſtick ſo cloſe, that the blood did drop into the heart only by drops, or by a very little ſtream. 2. That the paſſages bringing blood are often filled and ſtopt, inſomuch that the ſtream of blood is obſtructed or ſtraitned, many anatomical inſtances and obſervations manifeſtly declare. From thence it appears, that grumous, or as it were carnous concretions of the blood do frequently ſo ſtop the ventricles of the heart, and the roots of its larger veſſels, that the courſe of the ſtream of blood is almoſt entirely ſtopt. Moreover reaſon perſwades, and experience concludes this more frequently to happen in the leſſer veſſels: for ſeeing (as we have even now intimated) the blood emitted by Phlebotomy in Rheumatiſms, Peripneumonies, and Pleuriſies, when it is cold is covered all over with a thin skin altogether of the like ſubſtance with thoſe concreted Polypus's; it plainly appears, that it paſſes with difficulty through the paſſages of the leſſer veſſels by reaſon of thoſe viſcous excrements: wherefore that it may paſs by ſome means, it diſtends them very much, and ſometimes breaks quite through them, alſo it frequently unlocks their mouths, and opens gaps into the *Trachea*, inſomuch that portions of the extravaſated blood are by coughing frequently ejected. We have known ſome to have died Aſthmatic or ſhort-winded, whoſe Lungs being free from an Ulcer, or any more grievous wound, have ſwelled ſo much, that they wanted room for their motion within the cavity of the Cheſt: the reaſon whereof doubtleſs was, that the thicker and more feculent blood, for that cauſe not eaſily paſſing through thoſe veſſels, every where extended the Arteries and Veins, and cauſed it to ſtagnate in the leſſer Pipes. Moreover the feculencies of blood one while ſalt of different kinds, another while ſulphureous or earthly being combined with them, and thruſt into the ſmall paſſages of the veſſels, and fixed there, do altogether obſtruct them; inſomuch that the pneumonic circulation of the blood is contracted into a ſhorter ſpace, and conſequently the function of breathing is ſtraitned in the compreſſed Pipes or little Cells. There are many kinds and ſundry ways of ſuch an obſtruction, which if all or the chief ſhould be enumerated, ſuch a Pathology would ſwell into a too great bulk.

3. The blood is hindred from obſtruction of the paſſages. which are ſhut up divers ways: For divers cauſes here rehearſed.

The bronchial Pipes are filled.

Sometimes wax hard.

The veſſels are ſtuffed with concretions reſembling the Polypus.

3. The pneumonic paſſage of blood is not only hindred by reaſon of the paſſages ſhut and obſtructed, but ſometimes alſo being burſt aſunder. For thoſe veſſels being ſmall, or tender, or very looſe in ſome perſons, are frequently opened by the ſorce or acrimony of blood; ſo that the blood either burſting into the *Trachea*, is ejected by ſpitting, or heaped up in the interſpaces of the paſſages, cauſes a Peripneumony, or falling down into the cavity of the Cheſt, produces an Empyema. Of all theſe we ſhall treat ſingly in the Chapter of ſpitting of blood.

The blood is alſo hindred becauſe the paſſages are burſt aſunder, as in ſpitting blood.

There

One impediment of the blood is want or default of air.

3. There remains as yet a third impediment of blood in the pneumonic paſſages, which happens for the want or fault of Air. If at any time the Blood is not kindled after a due manner within the paſſages of the Lungs, from air breathed in by the *Trachea*; for that cauſe as preſently its flame is irregular, ſo likewiſe its motion is variouſly ſtopt or perverted: for although the blood is forced through the lungs by the meer impulſe of the heart, notwithſtanding the pulſe hereof is proportioned according to the tenour of its being kindled by the air; wherefore when the flame of blood is diminiſhed, or ſuppreſt, for want or through the fault of the air, preſently the pulſe proves languid or unequal, and by reaſon of the bloods courſe being troubled, or ſtopt, preſently a paleneſs and coldneſs ſucceeds throughout the whole body, with enervation of the members. But if inſpiration be wholly intercepted or fruſtrated (becauſe the nitrous particles are wanting) preſently the pulſe ceaſes, and anon life is loſt. The reaſon of all which is, both becauſe the blood being much impeded in its accenſion, or extinct, like Muſt given over working preſently ſubſides, and is unapt for any motion; and chiefly becauſe the flame of the blood failing, and being ſubſtracted from the brain, preſently the Hypoſtaſis of the animal ſpirits, as it were light ſtreaming from thence, immediately fails, and together with it the exerciſe or actions of all faculties do ceaſe. But if the blood is too much kindled, the Sulphur of the Blood, and the Nitre of the Air running together more than it ought; for that cauſe preſently, that this too much burning may be eventilated enough, the pulſe of the heart is increaſed to its utmoſt. We might adde many inſtances of this kind; but truely this conſideration of the blood leads us to the ſecond thing propoſed of Reſpiration hurt; namely that we may duely weigh, what ſort of failings or defects do happen about the inſpiration as well as expiration of the Nitrous air, requiſite for the preſerving the nitral flame of blood; that is to ſay, from what cauſes they proceed, and alſo what effects they are wont to produce; in which ſearch we will firſt treat of Inſpiration hurt.

SECT. I. CHAP. III.

Of Inſpiration hurt.

Breathing hurt by the vicious qualities or defect of air.

BReathing is accounted hurt, when its uſe is fruſtrated, or any ways hindred; which moſt frequently happens, by reaſon of the fault or defect of the Air drawn in. As to the former, if the Air chance to be depraved, it neither duely kindles nor eventilates the blood, yea it ſometimes overthrows the temperament thereof, or infects it, as is every where ſeen in a Conſtitution of Air very malignant. That we may touch on the chief reaſons of theſe diſtempers, we are to obſerve, That as the Nitrous particles of Air are chiefly neceſſary, (as is manifeſt by manifold experiment) for the preſervation of life; ſo frequently it happens that Nitre of the Air either to fail or be wholly wanting, or by particles of another kind to be ſo much muffled, or bound up, that they cannot enough exerciſe their vital power; or laſtly, malignant or fatal Corpuſcles to be adjoyned thereunto. *The faults of the air.* Firſt, the nitrous particles of Air are deficient, if when it ſtagnating or growing hot the Nitre is chaſed thence, or not ſtirr'd into action. Wherefore, in a low-rooſt Chamber, or too cloſe, and in other places crouded with aſſemblies of men, or made hot with the ardor of the Sun, we difficultly or weakly breathe. The ſame comes to paſs in places of great height, on the tops of thoſe mountains exceeding the top of the *Atmoſphere*; wherein breath is faintly drawn for want of Nitre, neither can we live long there. Secondly, the Nitrous particles of Air are wont to be obſcured or blunted by other acceſſories, alſo ſometimes they are too much ſharpened. For as often as the South-wind blows, the Air is too moiſt and thick, inaſmuch as the Nitrous particles are ſeiz'd upon by the watry and ſulphureous, and are much blunted, ſo that while it is drawn in, the blood is not vigorouſly kindled, but like green wood put into fire it rather ſmokes than burns bright; wherefore during ſuch a ſtate of Air we become ſtupid and dull, and unapt for motion; but on the contrary, the North-wind blowing, the cooling, ſharp and moſt nipping particles are adjoined to the Nitrous, and the blood is enough kindled, and we breathe freely; yet the Vital flame is every where reſtrain'd by intenſe froſt diſproportion'd thereunto, and unleſs refreſh'd by motion and heat, it is frequently entirely extinguiſhed.

2. Be-

2. Beſides theſe faults of the Air, whereby breathing is wont to be hurt, moreover this evil ſometimes proceeds from its defect; inaſmuch as it cannot be drawn in in plenty enough. Of which effects though there are many and divers cauſes, yet for the moſt part it happens in reſpect of the organs of breathing, either hindred as to their motion, or their paſſages obſtructed. *The defect of air hurting breathing, proceeds from the pneumonic Organs.*

1. The Organs of breathing are either meerly paſſive, *viz.* which are moved, as the Lungs; or are Active, and move themſelves, and thoſe together, as the muſcles of the Cheſt and Diaphragma. In every of theſe the impediments of the motion by which breathing is hurt, happen variouſly. And firſt what reſpects the Lungs, we mentioned before, that they ſometimes very much ſwell, by reaſon of the veſſels being much diſtended, and fill'd with blood, inſomuch as being ſtiffe and inflexible, they obey not the turns of the Syſtole and Diaſtole of the Cheſt. Moreover it happens ſometimes through a phlegmon, little ſwellings, and other concretions of divers forms, that a like ſtiffeneſs is cauſed in them. Secondly, the active organs of breathing, or the moving parts, *viz.* the muſcles of the Cheſt and Diaphragma are wont to be perverted or ſtopt from their moving function by divers cauſes. A ſolution of continuity made in any part of theſe, either by clotting of blood, or by falling down of the *Serum*, and other humors, as in the Pleuriſie and Scurvy, or in thoſe that are wounded or bruiſed, doth every where cauſe pain in the place affected, with impotency of motion and difficult breathing. Moreover, ſometimes without pain, or any evident cauſe, thoſe parts being hindred from their motion do produce a moſt heavy purſineſs; As is frequently ſeen in an Aſthma, Suffocation of the womb, and in certain other convulſive or hypochondriac diſtempers. The reaſon of which paſſion without doubt conſiſts in this, for that the animal ſpirits appointed to the moving function of thoſe parts, are diſturbed about their Origine, or hindered in the paſſages of the Nerves, and are turned aſide from their due influx into the moving fibres: Inſomuch as many who are ſound enough as to their Lungs, and only obnoxious to affects of the Brain and Nerves, are frequently ſurprized with horrid fits of an Aſthma, as we have at large declared in another place.

2. The ſtopping of air, hindering breathing, whereby it leſs freely enters the Lungs, frequently happens, by reaſon of the Conveyances, *viz.* the paſſages of the *Trachea* being ſhut, or not enough open. For indeed thoſe paſſages are wont to be ſtopt (as we have formerly obſerved touching the Veſſels bringing Blood) and prohibit the full entrance of air, when they are either obſtructed or compreſſed, or more narrowly contracted. Though there are many cauſes and wayes whereby the paſſages of the *Trachea* are wont to be obſtructed, yet chiefly and moſt often a Catarrhal diſtillation of the *Serum*, while it departs from the blood, and flows out of the veſſels bringing blood into theſe parts; which being firſt thin and ſharp, produces a troubleſome Cough; afterwards thickening by digeſtion, and cleaving to the ſides of the *Trachea*, exceedingly ſtraitens the ways of inſpiration, and ſhortens them by quite ſtuffing up their extremities. In like manner the ſweating out of extravaſated blood, as alſo of *Pus* or ichorous matter out of the Lympheducts or Veins into the tracheal little bladders, doth frequently produce an Aſthma, and often a Conſumption; the reaſon of which ſort of diſtempers ſhall be more largely explained hereafter. Secondly, it is manifeſt enough by common obſervation, that the Tracheal paſſages as well the laſt as the intermedial, often-times are ſtraitened, or ſhut, by compreſſion. For after a plentiful meal, or abundant drinking of Wine or ſtrong Ale (inaſmuch as the pneumonic veſſels are very much diſtended by reaſon of the turgency of blood, and the ſides of the Trachea being preſs'd together, do not admit of a free and uſual entrance of air) men otherwiſe healthful enough, do breathe difficultly and painfully: Which truely we eſteem to happen from the lungs being filled and extended rather, than from a cram'd ſtomach hindering the Syſtole of the Diaphragma. Moreover, for this reaſon, even in the very paroxyſmes of feavers a frequent and painfull breathing is manifeſt. Neither onely from the turgency of blood, but alſo from the ſame ſtagnating, or extravaſated, and alſo from ſtony concretions, and divers other manners, the veſſels of the Trachea being preſſed together, cannot diſcharge a free breathing. *The various ways of Obſtructions.* *A Catarrh.* *The ſwelling of blood by which the paſſages are preſs'd together.*

3. The paſſages of the Trachea being ſometimes more nearly contracted and cloſed from their fibres convulſively diſpoſed, deny a paſſage to the Air for due breathing. From hence, when there is no obſtruction, or ill conformation in the lungs, as alſo no conſumptive diſpoſition, yet from thoſe fibres preternaturally convulſed and drawn together, dreadfull fits of an Aſthma frequently ariſe. Whereas we have in another *The Cramps of the tracheal paſſages.*

place

place diſcourſed of theſe paſſions, it will not be requiſite here again to repeat that diſcourſe. Beſides theſe accidents of breathing hurt, there are certain others which are ſtirr'd up by reaſon of the Air prohibited in its firſt entrance, *viz.* in the Noſtrils, the throat, the *Larynx*, from a tumour or ill conformation: For the *Polypus* in the Noſe, the Quinzy in the Throat, or inflammation of the Tonſils, do render a difficult breathing; in the ſame manner as a heap of ſand about a Haven, obſtructs the ingreſs and regreſs of Ships. But truly ſince the reaſons of thoſe paſſions, and their manner of being made, are expoſed to ſenſe, it ſeems ſuperfluous here to deliver their cauſes.

SECT. I. CHAP. IV.

Of Expiration hurt.

The act of expiration is eaſier than of inſpiration.

AS Expiration is much eaſier, and with leſſer trouble performed than Inſpiration, ſo it is leſs endangered to be ſtopt or perverted, as to its function: for in truth the contractive endeavours of fewer muſcles are required to perform that, inſomuch as ſome do affirm that the meer relaxations of the moving parts, whereby the dilatation of the breaſt is diſcharged, doth ſuffice for its conſtriction. Hence when in the agony of death, the ultimate labour is to open the breaſt, and fetch breath, by which the flame of life may be continued; as ſoon as that endeavour is become fruſtrate, the animal exſpires, and is readily extinct. But truly we have already clearly enough evinced, that the tasks of breathing out, no leſs than thoſe of breathing in, are performed by the help of peculiar muſcles. Wherefore, when it happens that the Organs of Expiration are either hurt or prejudiced, there muſt needs follow difficulty or depravation of that function. The moving parts, which bind together the breaſt, and ſtraiten the cavity thereof, are eſpecially the inward muſcles of the breaſt, ſome belonging to the Loyns, and others to the Abdomen; as alſo the muſcular fibres of the *Larynx* and *Trachea*; by reaſon of ſome faults, occupying ſometimes theſe, anon them, either ſingle or many together, exſpiration is wont to be ſtopt or perverted after a diverſe manner. Although the hurt of this function frequently depends upon inſpiration being prejudiced; notwithſtanding it ſometimes happens alone; ſo that when we ſuck in Air eaſily and duely enough, we return it diſturbed or perverſly, which truely is wont to come to paſs through divers cauſes, and after many manners (the chief of which we ſhall here briefly touch upon.)

Expiration hurt ſometimes proceeds from the fault of inſpiration.

Sometimes being alone depends on various cauſes.

1. For firſt, when a wound, or convulſive or paralytical diſtemper happens in one muſcle (which cauſes exſpiration) or in more, for that cauſe the cavity of the *Thorax* cannot be ſo freely drawn together and compreſs'd, for the more full breathing out air or breath. Hence not only ſuch as labour in a Pleuriſie, but in a tumour or wound in the intercoſtal muſcles or the Abdomen, cannot eaſily cough, or ſing, or perform other acts of ſtronger expiration: Neither is the due drawing together of the *Thorax* leſs ſtopt, by reaſon of the moving fibres of thoſe parts affected either by a reſolution, or a cramp.

1. On the wound of a part moving.

2. In a Cough.

2. The act of expiration, whereas it is variouſly perverted or diſturbed, ſo it chiefly happens in a cough, in ſneezing, in laughing, in crying, and in Hiccough; into the reaſon and manner whereof we will briefly enquire; And firſt we ſhall ſpeak of a Cough.

The deſcription of a Cough.

A Cough may be deſcribed, that it is a vehement, more frequent, unequal and loud expiration, ſtirred up either for the quieting of ſome troubleſome and provoking thing, or for expelling of it out of the Lungs through the paſſage of the *Trachea*. For air being violently excluded, and daſh'd in the way on the ſides of the Tracheal paſſages, whatſoever is in any place impacted in them, if it be eaſily moved, it diſcuſſes and wipes it away, and frequently ſends it out of doors.

Its formal reaſon and the manner of its being dont.

For the exciting of a Cough, both the muſcles contracting the *Thorax*, and alſo the moving fibres of the *Bronchii*, do concur in motion with a joynt force together. For while the muſcles ſtraiten the cavity of the breaſt, and every where ſqueeze the whole lungs; theſe fibres one while contracting theſe tracheal paſſages, another while them, cloſing behind the air while it is driven forwards, do endeavour its expulſion more quick and vehement.

A more intenſe ſudden inſpiration precedes every act of a Cough, to wit that the air being admitted in greater plenty, may preſently be more violently driven out with noiſe; in which endeavour not onely the new that is freſh breathed in, but alſo the old, being heaped up before in the tracheal little bladders, is driven forth together with a noiſe, for the encreaſe of breath blown out; and when what is troubleſome is not ſettled nor removed at the firſt aſſault, the vehement exſpiration of this kind is repeated by a frequent courſe, even to the great wearying of Nature.

Its primary cauſe.

The firſt cauſe of every Cough is an irritation of the nerves or fibres belonging to the lungs; concerning the nerves we are to obſerve, that not onely the branches and their ſlips inſerted into the Lungs, but others from which they do ariſe, or with which they do intimately communicate, being provok'd in places far diſtant from the breaſt, immediately cauſe a cough: for which cauſe oftentimes a ſharp humour being lodged within the Brain, and from thence falling down into the little head of the pectoral nerves, is wont to produce a moſt troubleſome Cough or Aſthmatick diſtempers, as not long ſince we have declared by notable inſtances. For the ſame reaſon a pain inflicted on the noſtrils, palate, or *Gula*, provokes a Cough, or rather a vain attempt of coughing. Moreover a little *Serum* diſtilling from the Arteries into the upper parts of the *Gula* or *Larynx* produces a frequent and very troubleſome Cough, without any notable prejudice of the Lungs. But truly this provocation, inflicted on the nerves and fibres diſtributed in the Lung it ſelf, more frequently, and truly more violently provokes an endeavour of Coughing, which is repeated by courſes, till what is troubleſome be turned forth, or the provocation reſtrained. Of this kind of Cough from the nerves, a notable Example ſhall be after ſet before you.

The evident cauſes thereof.

The provoking cauſes producing a Cough are manifold, and make their ſtay in ſeveral places: for beſides that the nerves, as we but now intimated, and alſo the membranes, with which there is an intimate communication with the Lungs, being provoked in the open Noſtril, give an impreſſion of that paſſion at a diſtance to the Lungs; moſt frequently that irregular exſpiration is ſtirr'd up, by reaſon ſome incongruous or in ſome meaſure unproportion'd thing is caſt into the Lungs. For in the firſt place, that this troubleſome thing may be removed, the nerves and the nervous fibres diſperſed about the Lungs are irritated; afterwards by the conſent of theſe, the muſcles of the breaſt that draw it together, and the moving fibres of the Trachea at once are forced into vehement and often repeated contractions.

The kinds thereof.

Every Cough is either moiſt or dry; in the former a certain humour being depoſited in ſome place within the tracheal paſſages is ſhaked by coughing, and being to be thrown out upwards is caſt into the mouth. That humour, whereas it is manifold and after divers ſorts, for the moſt part it is either call'd ſerous, or nutritious, or purulent, or bloody.

Of the former there are many kinds and differences; namely, as to its conſiſtence it is either thin, or thick, or crude, or digeſted; as to its colour, it is either white or yellow, or ſomewhat greeniſh; alſo ſometimes it is bleviſh, or black. Moreover, a moiſt Cough is variouſly diſtinguiſhed, as to the places from whence the humour to be coughed out proceeds. For ſometimes cleaving to the ſides of the *Larynx*, or ſweating from them, the moving fibres being ſhaken by a gentle little Cough, it is eaſily and by a ſhort paſſage caſt forth into the mouth; ſometimes the matter to be excerned, being impacted a little deeper in the pipes of the *Bronchii*, is not ſhook out but by large expirations, and often repeated; and laſtly it ſometimes happens, that the excrements to be caſt out, are depoſited within the fartheſt little bladders of the Trachea, out of which it is not brought forth without a vehement labour of coughing, and that frequently repeated, and at laſt driven forth by a long journey through the whole lungs. Concerning the Cough of a nutritious humour, as alſo of a bloody and purulent, hereafter it ſhall be diſcourſed when we treat of a Conſumption and its remedy.

A moiſt Cough.

A dry Cough.

A dry Cough, as often as it is the proper paſſion of the Lungs, is excited after many manners and by ſundry cauſes; for an obſtruction of any of the pneumonic paſſages, whether it be by compreſſion, or oppletion, or contraction, doth neceſſarily induce this. Wherefore an inflammation, a tumour, a little ſwelling, a ſtagnation of the blood either through plenty or ſcarcity, alſo gravelly, ſtony, or polypoſe Concretions, worms and many other preternatural things, inaſmuch as they almoſt perpetually provoke the nervous fibres, do induce a dry, vain Cough, but very troubleſome. But

a dry Cough ſometimes is ſtirr'd up by the inſtinct of Nature, as in place of a Pump; to wit, that the blood either by reaſon of its proper ill temperament, or by reaſon of the pneumonic Veſſels not being open enough, not paſſing well through the lungs, may be promoted by the ſhaking of theſe parts, and forced into a more rapid motion.

What belongs unto the other acts of expiration hurt, as when in ſneezing, hiccough, laughing, crying, and in other affects its natural and even function is troubled or perverted; ſeeing the rendrings of the cauſes of theſe (which alſo in another place we have in part deſigned) do not properly appertain to our purpoſe, omitting them here we will paſs to the thing chiefly deſigned, *viz.* to the diſeaſes of the breaſt and their remedies, and to the reaſons of curing them.

SECT. I. CHAP. V.

Of a Phthiſis or Conſumption in general.

WHereas we have hitherto viewed the fabrick of the Lungs accurately delineated, and the motion thereof together with that of the whole Breaſt, and the ways and paſſages of the air, and of the blood, and of other humors through them; and have alſo obſerved their various impediments, their remora's, or diverſions, according to which it happens the act of the pneumonic function is after a diverſe manner hurt or perverted in inſpiration and expiration: now in the next place we are to deſcend to the Pathology of this region ſo travelled over, and, which was our deſign from the beginning, to treat of Medicines belonging to the *Thorax*, or Remedies appropriated to heal the diſtempers of the Breaſt, and the manner of their operation.

A Phthiſis accounted chief among the diſeaſes of the breaſt.

Of all the diſeaſes of the Breaſt a Phthiſis, or Conſumption, by right claims the firſt place: for there is none more frequent or difficult to cure. Moreover all the other affects of the *Thorax* being ill, or not at all cured, do lead into this, as leſſer ſtreams into a greater Lake, and ſo ending in a Phthiſis, loſe both their natures and ancient names.

The various acceptation of Phthiſis.

But truly theſe terms of *Phthiſis* and *Tabes* in their proper ſignification denote an Atrophy, or a withering away of the ſolid parts with debility of ſtrength: the diſtempers of which ſort frequently proceed from a wound or Ulcer of the Lungs; notwithſtanding ſometimes without any fault of theſe, the extenuation or pining away of the whole body takes its riſe from the meer fault of the blood, or chiefly from the nervous juice. Therefore before we handle a private pulmonary Phthiſis, ſeems to our purpoſe to explain the general reaſons of this ſickneſs, and to declare how many ways, and from what cauſes the ill temperaments of the humors are wont to induce a privation of nouriſhment of the whole body, as it were conſumptive. For truly the Conſumption of the Lungs it ſelf doth not next and immediately proceed from an Ulcer or corruption of that bowel; but it ariſes for as much as the blood from them contracting a corruption, and highly defiled, for that very cauſe loſes altogether its nutritive virtue. Moreover as well this as the nervous liquor acquires ſuch an indiſpoſition. Of which in general we will now inquire.

It denotes any Atrophy.

An Atrophy firſt depends on the blood made unfit to nouriſh.

And firſt what relates to the Blood, we may often take notice, that ſome pine away without a Cough, or without any apparent fault either in the Lungs or Breaſt; in the mean time as to appetite, digeſtion, ſleep, and almoſt the œconomy of the whole natural and animal function do carry themſelves indifferent; notwithſtanding, as if nouriſhment ſhould be poured into a Receptable bored through, they are not nouriſhed, but pine away ſenſibly maugre all Dietetical Rules. The formal or conjunct reaſon of which kind of affect frequently conſiſts only in this, that the blood being notably depraved, cannot aſſimilate the nouriſhing juice continually mixt with it; wherefore it doth not only forthwith ſend it away, but alſo takes away ſome particles of the ſolid parts; which ſnatching to it ſelf, it preſently throws out, or caſts it into ſome place or other, or conſumes it by evaporation.

The depravations or degenerate ſtates of the blood, that are wont to induce an Atrophy, either conſiſt in its proper diſtemper, or themſelves are communicated from ſome other place, and indeed chiefly from the bowels, or from the nervous liquor being alſo degenerate.

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The proper Dyſcraſie of the blood it ſelf is twofold, according to which it happens, that the ſaline-acid particles or the ſulphureous and moſt ſharp are exalted above meaſure, and predominate over the reſt. For ſometimes the blood withdraws it ſelf from its genuine diſpoſition, *viz.* a ſweet and volatile into an acid, as is always found in ſcorbutical, melancholy, or cachectical perſons. Wherefore the nutritious juice being ever mingled with the bloody maſs, ſeeing it cannot for that reaſon be aſſimilated, and affixed to the ſolid parts, is releaſed again in a ſhort time; and is either forthwith ſent away by urine, ſweat, or a Diarrhœa; or being pen'd up within the fleſh or cavities of the bowels, brings a Dropſie: of which ſort of diſtempers, being led forth into an evil ſtate, the ordinary effect is wont to be, that when ſome parts do ſwell very much, other parts are very much extenuated. Here it would be far from our purpoſe to deliver the true cauſe of the above-mentioned affects, and to put our ſickle not only into another mans harveſt, but alſo one far remote. 2. Moreover there is another ſtate of blood unfit for nouriſhment quite contrary to this, to wit, when being above meaſure hot and ſulphureous, and from thence always violently burning out, it conſumes the nutritious juice by its efferveſcence and raging, and cauſes it too much to evaporate; ſo that the ſolid parts being defrauded of their proviſion pine away. The perſons obnoxious to this diſtemper have large veſſels, and much diſtended with blood, but their fleſh withered and hardned by heat. Though perſons ſo affected ſeldom pine away to death, yet they grow old ſooner, and end their life in a ſhorter ſpace.

The conſumptive Dyſcraſie of the blood either from it ſelf or communicated from other parts.

1. The kinds of the former reckoned up.

2. The blood not only from its proper *indoles*, but alſo by reaſon of a Conſumption elſewhere, and chiefly communicated from the bowels and nervous juice, is often unfit to nouriſh. And firſt this frequently happens by fault of the bowels; for theſe being ill-affected, ſometimes do not duly digeſt the Chyme to be conveyed over to the blood; alſo oftentimes they pervert and defile it with their extraneous and heterogene ferments, inſomuch that the functions are fruſtrated in the faculties of breeding good blood and nouriſhment. Moreover ſometimes by reaſon of the Veſſels bringing the Chyle obſtructed within them, though much be eaten, yet little or leſs than due, is conveyed into the bloody maſs. Alſo in the bowels of concoction ſometimes Tumors, Impoſthumes, and Ulcers happen; from whoſe corruption the blood being infected in its paſſage, contaminates the reſt of the maſs, and renders it unapt to the work of nouriſhing. How often do we ſee from a Schirrus happening in the Spleen, Liver, Pancreas, or Meſentery, or by an Ulcer or cancrous Tumour of ſome Gut, as alſo of a Kidney, Womb, or Bladder, or otherwiſe malignant Sore, a deadly Atrophy to have ſucceeded without any notable fault of the Breaſt or Lungs? Yea Tumors, Impoſthumes, or cancrous and ſtrumous Ulcers happening in the outward parts, and eſpecially in the Back, do frequently end in a pernicious Conſumption. The reaſon whereof is plain, *viz.* in as much as in ſuch diſtempers both great plenty of the nutritious juice brought to the affected part through the Arteries, is either entirely beſtowed in the ſame place, or from thence is poured forth abroad, inſomuch that all the other parts of the whole body are defrauded of their due proviſion; as alſo that the virulent or very incongruous matter there engendered and lodged is ſwallowed up by again the Veins, which defiles the blood by an impure black gore, and from thence renders it altogether unapt to diſcharge the faculty of nouriſhing.

This proceeds ſometimes from a fault of the bowels or ſolid parts;

Neither only from the bowels and ſolid parts, but alſo from the nervous juice the ſtain (by which it becomes unfit to nouriſh) is frequently communicated to the blood. For when this liquor degenerates from its genuine temper, to wit, ſweet and volatile into an acid, preſently flowing out of the fibres and nervous parts, and flowing back into the blood, it doth precipitate the liquor thereof, and compels it into fluxes, whereby all the nutritive matter is caſt forth, and one while poured forth by Urine or Sweat, another while by Vomit or Looſneſs. The reaſons of all theſe, and how they come to paſs we have explicated in a late Treatiſe.

Or from the nervous juice.

But the nervous liquor, ſometimes by it ſelf, departing from its good temper, and being vitiated in its temperament, is a cauſe of want of nouriſhment, which alſo happens to be made in a twofold reſpect, or two manner of ways. For ſometimes that Juice being very much vitiated and degenerate, proves as it were vappid and decayed; ſo that it doth not actuate enough the fibres as well nervous as carnous, and inlighten them with an animal ſpirit: wherefore as the motive virtue, ſo alſo the nutritive fails in the ſolid parts. From hence either the entire body, or certain members and parts thereof being for ſome while affected with a Palſie, at length they wither away: as we have at large declared the reaſon thereof in another place. 2. We have

The nervous juice ſometimes of it ſelf is chiefly the cauſe of an Atrophy.

alſo obſerved, that many labouring with a ſlow Feaver (or as called by us a nervous) do preſently languiſh, and in a ſhort time become much emaciated. In either caſe the ſame reaſon ought to be aſſigned; for, as is ſhewed in another place, ſeeing the animal ſpirits, together with the nervous liquor, their vehicle (which is as it were the maſculine ſeed) do actuate the nutritive humour every where collected by the ſolid parts even as the feminine ſeed, and render it as it were pregnant with a nutritive faculty; for that cauſe if that nervous liquor becomes either depraved or vappid, the bulk of the ſolid parts pines away as if it were made barren.

Two chief kinds of Atrophies.

So much of theſe things touching an Atrophy, or waxing lean, and the formal reaſons thereof, the cauſes and various manners of its coming to paſs in general. Of this diſeaſe as there are many kinds and differences, ſo two chiefly and more obſervably occurr, whereof either will deſerve a particular conſideration; *viz.* *Tabes* or *Phthiſis Dorſalis* commonly ſo called, and a Conſumption of the Lungs. This latter, which properly belongs to this place, ſhall be diſcuſſed in the following Chapter; in the mean time concerning that (becauſe the knowledge thereof doth illuſtrate the Pathology of this) we ſhall ſpeak in a word.

Tabes Dorſalis.

Two kinds.

Tabes Dorſalis, although it hath almoſt loſt its name in this our Age, or perhaps changed it into a Gonorrhœa, yet *Hippocrates* makes mention of it, and handling it avowedly, he aſſigned a twofold kind thereof, *viz.* one from immoderate Venery, and the other from a deſtillation into the Spine of the Back. What relates to the latter, I have often obſerved ſome to be moſt grievouſly vexed with a pain about their Loyns, yea ſometimes in the whole Back, which when for ſome time ſome have ſo laboured under, they afterwards come to be lame or crooked, and at laſt fall away in the whole body, all but the head. The cauſe of which diſeaſe doubtleſs conſiſts in this, *viz.* firſt a humour or a certain incongruous morbific matter, deſcending with the nervous juice through the ſpinal marrow, did run into the branches of the vertebral Nerves, and therefore from the beginning, by reaſon of the Fibres being twitched, a continual pain almoſt did ariſe; afterwards by reaſon of ſome Fibres being reſolved, the oppoſite ones more vehemently contracted diſtort certain Vertebra's of the Spine; and laſtly ſeeing the animal Spirits cannot actuate enough the Nerves and Fibres belonging to the trunk and members, by reaſon of the nouriſhment fruſtrated, the withering of the entire body ſucceeds. Surely when the nervous liquor and animal ſpirits paſs not fully and freely out of the Dorſal Spine into the whole body, from thence oftentimes a pining doth ariſe: hence Impoſthumes and Ulcers ariſe about the Loins or the *Os ſacrum*, which in as much as they conſume or pour forth the nervous liquor too much, cauſe an Atrophy in the whole, or at leaſt in the lower parts.

From the nervous juice ſtopt or depraved in the loyns.

From the expenſe of the humour through the genital parts.

2. Another kind of *Tabes Dorſalis* far more frequent, is alſo twofold: *viz.* it either ariſeth from the great or too-often loſs of the genital humor, or from a continual corrupt flux from the genital parts.

That humour is firſt either ſeed, a too great expence whereof induces an Atrophy.

1. As to the firſt, it is manifeſt by vulgar obſervation, that the immoderate uſe of Venery, yea involuntary efflux of the ſeed, if it be either great or continual, produce a faintneſs in the whole body, and at length a pining away. The reaſon of this (as we have intimated in another place) is not, that the ſeed, according to the opinion of ſome, deſcends from the Brain through the Nerves into the ſpermatic bodies, and from thence, by reaſon of a great loſs thereof firſt the Brain, and then the parts, all depending on the influence of the Spirits ſpringing from thence, become infirm and pine away. But ſeeing we have ſufficiently evinced, that the ſeminal matter is immediately ſupplied out of the maſs of blood into the genital parts, and that it is altogether the ſame with that out of which the animal Spirits inſtilled into the Brain are procreated, it will neceſſarily follow, by how much the greater portion is got to the Teſticles for repairing the loſs of ſeed, by ſo much is the Brain defrauded of its due ſhare, and therefore at length the function in the whole body, as well motive as nutritive, doth waver and diminiſh. Our furious Whoremongers are ſenſible of a great debility about their Loins, and the parts placed below them, to wit, the Thighs and Legs, do chiefly wither away; the reaſon is, becauſe as well the proviſion of the animal Spirits in its firſt ſpring, *viz.* in the Brain failing, the outmoſt chanels, *viz.* the ends of the ſpinal marrow, and the Nerves ſpringing from it, do ſuffer firſt and chiefly for this defect; and moreover becauſe near the Loins the arterious blood gives out to the Teſticles more excellent particles and chiefly reſtaurative, being deſtined to nouriſh the Back, and in the mean time the venous blood being for that cauſe decayed or conſumed, is enfeebled, and ſteals from the Loins as much as poſſibly may be.

The

The loſs of the ſeed cauſing a Conſumption is ſometimes voluntary, of which ſort the ſalacious and prone to Venery do ſuffer: ſometimes involuntary; of which affects there are divers kinds. For in ſome it only happens by dreams or obſcene phantaſms; but in others, beſides thoſe occaſions, every endeavour of the Back, whether through bearing a weight, or excretion of Urine, or the *faeces* of the Belly, cauſes the genital humor to be thruſt out: the cauſe whereof is, both becauſe the ſeed is watry and thin and at once ſharp and provocative, alſo becauſe the parts are weak, and not able duly to digeſt or retain it. *The loſſes whereof are voluntary or involuntary.*

In the other *Tabes Dorſalis* above-mentioned, not the ſeed it ſelf, but an ichor or a certain putrilage is caſt out abundantly from the genital parts; the efflux whereof, if it be great and continual, doth frequently impair the ſtrength of the whole body, and by withdrawing and prodigally removing the nutritive matter, it induces an Atrophy or conſumption. For near the ſpermatic Veſſels, or in paſſage from them, as well in men as women, there are certain Emunctories placed, whoſe faculty is to receive the ſuperfluous humour from the ſeed formed, and when it abounds to ſend it abroad through the genital parts. For this cauſe that thoſe paſſages in either Sex may be made ſlippery and moiſt (leſt they grow dry, and become leſs ſenſible) the Proſtates in men and the Glandules about the horns of the womb in women are conſtituted; out of both which always in the act of coition, and ſometimes without, when the ſpermatic bodies abound with too much moiſture, a certain ſerous liquor ſweats out: and in women (whoſe bodies are more moiſt, and in whom Nature hath made theſe ways for their menſtrual excretion) this doth oftner and more plentifully happen than to men. But if theſe Emunctories be affected with a great debility, or a certain virulency, ſo that they corrupt this liquor ſent, or do not retain it enough, it is not only ſent away inceſſantly, and flows out plentifully through the *Pudendum*, but alſo other ſuperfluous humours or recrements of the whole body flowing together to thoſe weak parts are thrown forth together. Alſo the nutritious Juice deſtined to the neighbouring parts flows thither, and preſently goes out together; ſo that at length by reaſon of the loſs of the nutritious Juice (which flowing to the ſame place is corrupted and continually ſent away) not only pains of the neighbouring parts, but of the whole body, and a pining doth ſucceed. Theſe things are commonly known in a Gonorrhœa, alſo in *fluore muliebri*, or thoſe affects from an impure bed, or immoderate Venery, or are cauſed by a blow, a bruiſe, violent exerciſe, or any other hurt inflicted upon the Loins. It is not proper to this place to deliver particularly the true rendring of the cauſe and curatory method of healing of this ſort of paſſions: we ſhall proceed to treat of a *Phthiſis* or *Tabes* properly ſo called, *viz.* which ariſes from the only or chief fault of the Lungs, which was the buſineſs of our deſign. 2. *Or Ichor flowing into thoſe parts from ſolution of continuity.* *The formal reaſon of a virulent Gonorrhœa.*

SECT. I. CHAP. VI.

Of a Phthiſis properly ſo called, or of a Conſumption ariſing by fault of the Lungs.

A Conſumption doth ſo frequently and uſually proceed from the Lungs being depraved, that ſome have termed it the peculiar Diſeaſe of this Bowel: and that it very often ſo comes to paſs, the reaſon is; becauſe (as we have ſhewed before) the pining of the body doth for the moſt part more immediately proceed from the blood depraved and unapt for nouriſhment, it is manifeſt, that as its perfection is acquired in the Lungs, ſo from theſe being ill-affected the ſame is moſt of all vitiated, and degenerates into a languiſhing and corruptible ſtate. For in the Lungs rather than in the Heart or Brain, the threads of life are ſpun, and there they are oftneſt defiled or broken.

A Phthiſis is uſually defined to be A pining away of the whole body, taking its riſe from an Ulcer in the Lungs. But leſs true: becauſe I have opened the dead bodies of many that have died of this diſeaſe, in whom the Lungs were free from any Ulcer, yet they were ſet about with little ſwellings, or ſtones, or ſandy matter throughout the whole: for from thence the blood, becauſe it could neither be freely circulated in the *Præcordium*, nor animated enough by the nitrous air, and when in the mean time it is perpetu- *The definition of a Phthiſis.*

perpetually polluted by its proper dregs depoſited in the Lungs, is frequently vitiated and made incapable of nouriſhing thereby: wherefore a *Phthiſis* is better defined, *that it is a withering away of the whole body ariſing from an ill formation of the Lungs.*

The cauſe aſſigned by the Ancients. The Ancients following *Hippocrates*, for the moſt part have aſſigned only two cauſes of this diſeaſe, *viz.* a *Catarrh*, and *the breaking of a Vein*, to which ſome have added an *Empyema:* and others exclude a Catarrh from this number: for what is vulgarly affirmed, that flegm falling from the Head into the Lungs, and abiding there putrifies, is moſt commonly the cauſe of a Phthiſis, or is often brought by it, we have formerly intimated to be altogether erroneous, and ſhall preſently ſhew it more clearly. In the mean time to ſhew what the matter is that generates a Conſumption as often as it ariſes without an Empyema or Hæmoptoe going before, it muſt be conſidered after how many manners and by what ways any thing diſagreeable or heterogene can enter into the Lungs; which diligent ſearch being made, it will eaſily appear, that any thing that is an enemy to the Lungs creeps in and is admitted chiefly either by the *Trachea* or by the pneumonic Arteries, yea and ſometimes haply by the Nerves, but nothing by the Veins or Lymphæducts, whoſe function is only to carry back or away the blood or Lympha, and to leave there nothing at all.

What the conſumptive matter is.

By what ways it enters the Lungs.

As to the *Trachea*, it is manifeſt it is ordained for this end, that by its paſſages or pipes the air might be conveyed in or preſently carried back by a conſtant recourſe from whence it comes; moreover, whether any matter being hurtful or mortal to the *Præcordia* may be admitted the ſame way, ſhall be now our preſent diſquiſition. And that the Lungs frequently incur a pernicious pollution by this entrance is clear from hence, becauſe the moiſt air of ſome regions, repleat with fumes, or abounding with malignant vapours, doth frequently induce the conſumptive inclination; nevertheleſs the affection thereof is wont to be communicated only by aerial minute particles (whereby either the temperament of the blood or the conformation of the Lungs or both are prejudiced.) But whether beſides this a ſerous matter or ſome humor corrupting the Lungs doth enter them through this paſſage, is not without reaſon doubted: although many do determine a Catarrh or a deſtillation of the Serum from the Brain into the Lungs by the paſſages of the *Trachea*, the principal cauſe of a Phthiſis. Which opinion being erroneouſly delivered by the Ancients, I admire any either of our modern Phyſicians or Philoſophers have admitted thereof; for it is manifeſt by anatomical obſervations, that nothing from the Brain by the *Glandula pituitaria* (which ſeems the only paſſage from thence) falls down into the Palate or Breaſt, but that the Serum there depoſited is conveyed by appropriate paſſages to the jugular Veins, and is remanded to the blood. Moreover it is manifeſt to ſight, that whatſoever relique of Serum is laid aſide in the Glandules of the Ears, Mouth, Noſe, or Face, is conveyed from them all by peculiar paſſages, inſomuch that no humor whatſoever deſtils from the Brain or the Palate into the Lungs.

Sometimes by the Trachea, yet not deſtilling from the head.

But although matter exciting a Cough doth not deſtil from the Head by the *Trachea* into the Lungs, yet ſometimes falling down from the ſides of the *Trachea* into their cavities, it produces that diſeaſe commonly called a Catarrh. For the *Aſpera Arteria*, like the Arteries bringing blood, are endued with a nervous and muſculous Coat, and ſo do occaſionally enjoy ſenſe and motion, having alſo a glandulous Coat and full of little veſſels to ſuſtain the vital heat and nouriſhment. Theſe laſt Coats make thoſe interſpaces, and as it were cover the Cartilages. Moreover the ſuperfluous ſeroſities proceeding from the blood watering the *Trachea* are depoſited into this glandulous Coat, which for the moſt part preſently ſweating into the cavities of the *Trachea*, ſerves chiefly to make them ſlippery and moiſt: but if the maſs of blood be poured out too much, and precipitated into ſeroſities (as it frequently happens, a cold being taken, or the ſwallowing down of acid things, and on many other occaſions) for this cauſe a great plenty of watry matter ſweats out of the Glandules of the *Trachea* and mouths of the little Arteries into its cavities, which ſoon doth cauſe a moſt troubleſom Cough, and often much ſpittle (which afterwards comes to be conſumptive.)

But ſweating out of the ſides of the Trachea.

The conſumptive matter brought into the Lungs rather by the pneumonic Arteries.

But ſurely this cauſe of Spittle and as it were a Catarrhal Cough very rarely comes alone, becauſe while the blood watering the Trachea having ſuffered ſolution, throws in its ſeroſities into the Glandules (whence preſently they ſweat into its cavities) and alſo the remaining blood being in like ſort diſſolved, it inſinuates its *Serum* ſet apart within the pneumonic arteries, partly into the tracheal hollowneſſes, and partly into the Lympheducts, by the overflowing whereof the Lungs are as it were

were overwhelmed and much incited, for the moſt part provok'd to Cough and continual ſpitting. A Cough and ſpitting of this kind as long as moderate, only throwing off the ſeroſities of the blood, rather are beneficial than prejudicial; becauſe the maſs of blood, and the very lungs being throughly purged after this ſort, thoſe ſymptoms for the moſt part ſpontaneouſly abate, and from thence enſues a more perfect health. But if they be protracted a long time, the ſerous humour being on both ſides laid aſide into the tracheal paſſages, and from thence more plentifully daily heapt up, at length it will change into corruption; becauſe as well the free enjoyment of air is impeded, as alſo the motion of the blood, and its temperature wholly perverted; from hence a Cough becomes more fierce, and breathing more difficult; nay rather the whole maſs of blood in as much as it is defiled by the foul blood (which the Veins receive from the Lungs) degenerating by degrees from its benign properties, and being depraved, it not only continually pours forth the ſuperfluous Serum, but alſo the nutritive Juice (which it cannot aſſimilate) out of the pneumonic Arteries into the tracheal paſſages; and ſo this maſs of conſumptive matter is daily increaſed, till the Lungs being more and more obſtructed and filled, and the blood being defiled, and rendred unfit to perform any of its functions, the Cough and Spittle become worſe and worſe, and preſently become dangerous; Moreover breathing being hurt, the faintneſs and pining away of the whole body, the debility of all the functions, and at length a hectick feaver, and a haſty declination to death follows.

A Cough and ſpitting ſometimes healthful.

Yet often being too much is dangerous.

When by the long continuance of a Cough and Spitting, leaſurely encreaſing, the humour is more plentifully depoſited out of the maſs of blood into the lungs, it firſt of all enters into the tracheal little bladders, and at length fills them, and ſomewhat diſtends them, from which while every morning by expectoration then more copiouſly performed, it is almoſt entirely caſt out from them, thence the *Thorax* is exempt for a ſhort ſpace from the burden, and reſpiration ſeems more free: yet a little afterwards the blood being ſtuff'd again with *Serum* or nutritive juice, it pours down new matter into the lungs, and from thence again after meat or ſleep the little bladders are fill'd, and the humours by the afflux daily encreaſed, are more diſtended and enlarged, and at length the ſides of two or more of the little bladders, being burſt, many little bladders are here and there framed as it were into one lake, within which the conſumptive matter being more abundantly collected, there it putrifies (for it is not entirely preſently caſt out) and from thence it corrupts the ſubſtance of the lungs, to which it is joined, and imparts a putrid defilement to the blood paſſing through it. This breach thus made in the lungs is daily encreaſed, and frequently more are at the ſame time formed in divers places, and by reaſon of the great plenty of humours heaped up and putrified in them, a heavineſs of the breaſt is felt, like a weighty burden upon them, the breathing is more hindred; moreover from the tabid blood being more plentifully intermix'd with the maſs of blood, frequent effervеſcences of it, deſtruction of the nutritive juice, alſo thirſt, heat, loſs of appetite, nightly ſweats, and a pining of the whole body do ariſe. But the blood being polluted from the lungs, cauſes them to be puniſhed with a reciprocal affection, that is to ſay from its peculiar pollution; becauſe the blood in the veins receiving this purulent matter in every circuit, it immediately delivers it into the arterial; from whence, whereas it cannot be ſent enough away by ſweat, or by Urine, it is brought back by the pneumonic arteries to the lungs, where again being ſeparated from the blood, it is every where conveyed as well into the little bladders of the Trachea as into the leſſer paſſages; inſomuch, that at length the whole frame of the lungs being filled, clefts or ulcers are formed conſequently in many places, and all the other hollowneſſes are ſtuffi with frothy quitter.

Why the Conſumptive matter affects, and by degrees hurts the lungs.

How an Ulcer of the Lungs is made.

But ſometimes it happens that there is one Ulcer or hole, or happily two formed in the Lungs, and the ſides grow callous round about, ſo that the matter being there gathered together is not conveyed into the maſs of blood, but is daily expectorated though in a vaſt plenty. They that are ſo affected, as if they had but an iſſue in the lungs, although they caſt up much Spittle, and thick and yellow matter every morning, and a little ſometimes all day, yet otherwiſe they live well enough in health, they breathe, eat and ſleep well, are well in fleſh, or at leaſt remain in an indifferent habit of body, and frequently arrive to old age: inſomuch that ſome are ſaid to have been conſumptive thirty or forty years, and to have prolonged the diſeaſe even unto the term of their life (for that cauſe not being ſhortened). And in the mean time others who cough or ſpit leſs, within a few months fall into a hectick feaver, and in a ſhort while are hurried into their grave.

An ulcer of the lungs covered with a callus leſs prejudicial.

Hither-

The evident cauſes of a conſumption.

Hitherto touching the conjunct cauſe and formal reaſon of a Phthiſis or pulmonary Conſumption; what belongs to the other cauſes (that is to ſay, procatarctic and evident ones) they truly are various and manifold, inaſmuch namely as they are more near or more remote, inward or outward, and laſtly connatural or adventitious: That I may undertake to deſign the powers, operations, and modes of effecting of all theſe in producing a Phthiſis; primarily it is requiſite that I ſhew, by how many modes, and by reaſon of what occaſions the ſerous humour or (as folks commonly ſay) the Catarrhal, is laid apart out of the maſs of blood into the little bladders of the lungs, and into other paſſages of the Trachea. Upon diligent ſearch of this it is obvious to any one to perceive the morbific cauſe conſiſts of two parts, and that the fault is in the ill temper of the blood ſending an offending matter to the *Thorax*, and alſo the weakneſs or ill tone of the lungs eaſily receiving it.

The primary cauſes of a conſumption ſome from the blood, others in part from the lungs.

The ill temper of the blood diſpoſes to it.

As to the former, it is manifeſt enough by common obſervation, that the maſs of blood being ſtuft with incongruous particles, *viz.* its proper ones degenerated, or with others from other places intermingled, doth boyl up for the expurging of them, and what is to be ſeparated, when it is not eaſily ſent away by any other ways, it is ſpread abroad into the lungs, (if they are of a weaker conſtitution) and cleaves to them.

There are many dyſcracies of the blood, and thoſe of divers kinds and affections, by by which its liquor being diſſolv'd in its conſiſtence, and as it were curdled, doth not rightly contain the ſerous and nutritive juice within it ſelf; moreover ſending away theſe and other excrementitious humours unceſſantly from it ſelf, as ſometimes it depoſits them among other parts, ſo more often into the lungs.

1. The blood ſometimes like Milk grown ſour of it ſelf, is depraved by little and little, and at length departing from its genuine faculty into a ſourneſs, and being diſſolv'd in its exiſtence, doth caſt abroad its ſeroſities (too eaſily prone to ſeparate themſelves) out of the Pneumonic and alſo Tracheal Arteries into the tracheal paſſages. Thus to ſome it is ordinary once or twice in a year, without any manifeſt cauſe to be afflicted with a grievous and troubleſome Cough, with copious ſpitting, which in a certain proceſs of time (after the blood purged from its dregs and excrements recovers its temperature) doth ſpontaneouſly abate, and after doth ſucceed a more firm and durable health. By reaſon of ſuch a Cough ſerving for a purge to the blood, I have known ſome often in a day, and eſpecially every morning, who were wont to ſpit out ſpittle like black Ink, with a ſmall endeavour of the Trachea; which diſtemper when for many months they had conſtantly labour'd under, after a greater Cough occaſionally contracted, with much and yellow ſpittle, they have afterwards eſcaped altogether free from that former black ſpittle; the reaſon whereof is, that a heavier Cough abiding with plentiful ſpitting for ſeveral days, altogether purges away thoſe melancholy fœculencies from the blood, and moreover it alters the temperament of the blood, or rather takes away the ill temperament thereof.

And ſometimes it receives a conſumptive taint from the nervous juice.

2. The nervous juice being frequently degenerated, and with an abundant lympha returning back out of the fibres and nervous parts into the blood, as it produces ill affects of the bowels, and of the reins (whereof in another place we have hinted) ſo ſometimes it cauſes a fierce and very troubleſome Cough. This kind of Cough one while is Catarrhal, inaſmuch as the Lympha having paſs'd through the maſs of blood, is depoſited in the Lungs by the arteries; another while it is convulſive, inaſmuch as the Nerves and fibres, conſtituted to move the breaſt, are poſſeſt by that liquor, and are provok'd into convulſive motions: from either cauſe either conjunct or ſeparately it comes to paſs, that more grievous paſſions of the brain and nervous kind frequently call on a troubleſom Cough, or are wholly changed into it.

And ſometimes by reaſon of a fault communicated from the Lympheducts.

3. Beſides the faults of the blood and nervous juice, frequently exciting a Cough, it is probable that it ſometimes ariſes from the Lympheducts being obſtructed, which belong unto the Lungs: for whereas very many Veſſels of this kind are ſpread abroad through the Lungs, whoſe function it is to receive whatſoever is ſuperfluous of the Lympha that is carryed through the Arteries into the *Præcordia*, and not immediately brought back by the veins, and to convey it to the trunk of the paſſage of the *Thorax*; if by chance it happens that theſe paſſages are ſtopt or obſtructed by viſcous matter, or compreſs'd or thickned by cold ſhould not well diſcharge their duty, it muſt needs be that thoſe watery excrements ſhut out from their wonted ſluces, or whirling back into the blood, do incite its fierce boyling up, or being poured into the paſſages of the Trachea, do ſtir up a Cough.

4. Neither

4. Neither do the humors above-mentioned only, in as much as they either pervert or hinder the craſis or motion of the blood, induce a Cough (which frequently is the beginning of a Phthiſis;) but moreover any uſual or wonted Evacuations ſuppreſſed, or let, do uſually impreſs a fault upon the Lungs. The menſtruous flux or the Hæmorrhoids obſtructed, often bleeding at the Noſe it by chance it ceaſes, Iſſues cloſed up, Puſtles, Scabs and Wheals driven back, do frequently affix a taint in the *Thorax*. If a plentiful ſpitting from the Glandules of the Mouth ſtops of its own accord, or be cured by Medicine, afterwards ſometimes a conſumptive Cough ſucceeds; wherefore the ſame is vulgarly called a Rheum, which had lately fallen from the Head into the Jaws and Throat, and thence deſtilled deeper into the Lungs; when indeed it is nothing elſe but a certain ſuperfluous ſeroſity of blood, that being uſed to be put aſide by the cephalic Arteries into the Glandules of the Mouth, now being excluded thence, is hurried through the pneumonic Arteries into the Lungs. *The fourth reaſon is uſual evacuations ſuppreſſed.*

Beſides theſe private and periodical, or extraordinary Evacuations, whoſe ſuppreſſions incline to a Cough and Phthiſis, there occurs another general and conſtant Evacuation, *viz.* inſenſible tranſpiration; which being either ſtopt or ſuppreſſed, is oftner the occaſion or parent of that evil than all the reſt. For the ſteams that uſually evaporate by the Pores of the skin being reſtrained within, ferment the blood, and ſoon pervert it, and cauſe it to be precipated into ſeroſities; which with other excrements of the maſs of blood being immediately laid aſide in the Lungs, do ſtir up a troubleſom Cough and often a conſumptive one. Hence it is a common obſervation, that the catching of a cold, by which the Pores are ſtopt, whether it be by the blowing of cold air, or being wet by rain, or leaving off cloaths, or by what other means it may come to paſs, diſpoſes very many to diſtempers of the *Thorax*. Wherefore in our Idiom the cauſe being put for the effect, a Cough is called *Catching of cold*. *By reaſon of tranſpiration hindred.*

Theſe are the chief cauſes and occaſions which occur from the blood any ways depraved, and therefore depoſiting a peccant matter into the Lungs. There follow other cauſes in regard of the Lung it ſelf, *viz.* thoſe which diſpoſe this Bowel more readily to a Cough or a Phthiſis, of which there are three ſorts. 1. An ill frame of the Breaſt. 2. An innate weakneſs of the Lungs, or hereditary diſpoſition to a Conſumption. 3. Preceding diſeaſes of the *Thorax*, as a Wound, a Blow, a Pleuriſie, a Peripneumony, Empyema, Spitting of blood, the ſmall Pox and Meaſles, *&c.* 4. The incongruity of air which is inſpired (as deſerving a place among the procatarctic cauſes.) By reaſon of any one of theſe cauſes, and ſometimes of many together, the matter provoking a Cough, proving often after conſumptive, doth eaſily aſſault the Lungs, and enters them, and frequently imprints a deadly hurt. On each of theſe we ſhall inſiſt a little. *Partly from the Lungs.* *From the breaſt ill formed.* *From the hereditary diſpoſition.* *From foregoing diſtempers of the breaſt.* *From incongruity of the air.*

Firſt therefore as to the frame of the Breaſt the caſe ſtands thus: *viz.* that the Lungs being ſtill whole and ſound, and free from any phthiſical impreſſion, may be kept for a long time in their office, it will behove that they ſtill be exerciſed with a motion that is vigorous, and with ſtretched out ſails as it were to diſcharge the ſtrong interchanges of the Syſtole and Diaſtole; to that end, that the air being plentifully ſuckt in, may be admitted to their inmoſt apartments, and from thence immediately be caſt back for the moſt part together with all the effluvia and ſooty vapours at every change of breath. Wherefore ſince the action of the Lungs doth depend much on the frame of the *Thorax*, as being the moving Engine, it muſt needs be, that by reaſon of its ill faſhioning, the function of breathing becomes defective in many things. There are two ſpecial kinds of a Breaſt ill framed, (*viz.* crookedneſs, and ſhoulders like wings) for which reaſon many are found prone to a Phthiſis: the reaſon of which is, that in any ſuch figure of the breaſt, being either depreſſed or made long, the Lungs do neither injoy a ſpace ſo free and ample, nor can the moving Muſcles be ſo ſtrongly contracted as in a ſquare breaſt. *The reaſon of the former expoſed.*

2. The innate debility or hereditary diſpoſition of the Lungs to a Conſumption is ſo frequent and vulgarly known, that when any is found inclining to a Conſumption, he is preſently queſtioned, whether his parents were not obnoxious to this diſtemper? Very many of theſe being endued with a narrow breaſt and a neck ſomewhat long, and of a conſtitution very tender, contract a Cough from the leaſt occaſion; neither can they endure a cold or moiſt air. To ſome of theſe a manſion in a City is very prejudicial, where the air is breathed in thick and ſmoaky; on the contrary, to others prone unto the ſame diſpoſition it is very friendly (the reaſon whereof we ſhall diligently inquire hereafter) To all of them a North-wind is for the moſt part an enemy, conſidering that it uſually irritates a Cough, alſo a Spitting of blood, a Pleuriſie, or Peripneu- *What an hereditary diſpoſition is.*

mony, *viz.* the pneumonic or the thoracical Veſſels being thereby ſtufft, and in the mean time the blood being rendred more turgid and ſharp, by reaſon of tranſpiration hindred, and the effluvia's reſtrained within the maſs thereof.

In what it conſiſts.

For an hereditary diſpoſition to a Phthiſis doth chiefly conſiſt in theſe two things: *viz.* 1. In regard the Patients being endued with a more ſharp and elaſtic blood, do require a more plentiful tranſpiration; which perhaps if it be leſs granted, the matter that was wont to evaporate redounds upon the infirm Lungs. 2. If the pneumonic Veſſels be too looſe and tender, they do not duly contain the Serum and other recrements of blood within the diſſolved maſs thereof, but they ſometimes ſuffer both them and a certain portion of the blood it ſelf to break out into the Tracheal paſſages: whoſe moving Fibres, when they are infirm, do not preſently turn forth what is poured out into the cavities; but they ſuffer it to abide and putrifie in the ſame place, and at length to degenerate into black filthy gore corruptive both of the Lungs and blood.

What the conſumptive diſeaſes of the breaſt are.

3. A Phthiſis is ſometimes the product or conſequent of ſome other previous diſtempers of the Breaſt. Thoſe conſumptive paſſions chiefly are Empyema's, Pleuriſies, a Peripneumony, and Impoſthume of the Lungs; and ſometimes the ſmall Pox, Meaſles: alſo irregular Feavers ill or ſlightly judged, do cauſe the ſame effect. The chief of theſe diſtempers, or at leaſt thoſe which are proper to the *Thorax*, together with the rendring the reaſon of the cauſes, and how they diſpoſe to a Conſumption, ſhall be declared hereafter, with the reaſons and manner of procedure; in the mean time we are to take notice, that this kind of fault is common to them all, that is to ſay, they diſſolve the unity and weaken the tone of the Lungs, and pervert the temperature of the blood; whence whatſoever incongruous or diſtempered thing is poured out upon them from its depraved maſs, they do eaſily admit thereof, and difficultly or not at all drive it back.

The influence of the air for exciting a Conſumption.

4. The procatarctic cauſes of a Phthiſis being now explained, *viz.* thoſe which conſiſt as well from the blood as the Lungs, there is another common to them both, which may be juſtly added, and (although altogether extrinſec) hath great affinity with them both, *viz.* the condition or temper of the air breathed in. For ſuch is the influence hereof to ſome conſumptive perſons, that the cauſe of the diſeaſe is ſometimes wholly aſcribed to the incongruity of the air wherein they dwell, and for a cure the alteration of air or ſoil is preferred to all other remedies whatſover. Hence many of our Country troubled with a Cough, or being in a Conſumption, flock to the Southern parts of *France*; and others in the mean time who cannot go beyond Sea, or will not, preſently haſten to remove out of the City-ſmoke into the Country as to a moſt undoubted refuge: wherefore all our Villages near *London*, which injoy a clear and open air, are eſteemed as ſo many Spittles for conſumptive perſons. Notwithſtanding all do not alike receive help from ſuch a change of places; for many either paſſing to *France* or to Country Villages, do in thoſe places rather find their graves than health. And therefore *London* is not preſently to be forſaken by all phthiſical perſons: for I have known many obnoxious to a Cough or Conſumption to have enjoyed their health much better in this ſmoaky air than in the Country. So that for cure of the ſame diſeaſe, while ſome avoid this City as Hell, others flye to it as to an *Aſylum*.

The groſſer and City-air to ſome conſumptive perſons healthful, to others hurtful.

The reaſon whereof is inquired.

The reaſons of theſe things do clearly appear out of the Doctrine of Breathing before handled; for we do demonſtrate the blood paſſing through the Lungs, both as to its kindling or vitality, and as to its motion doth chiefly depend on nitrous air ſuckt in; whence it is a conſequence, that the tenor of this ought to be ſo proportioned to the temperament of that, that the blood being moderately kindled within the *Præcordia*, may burn out clearly and vigorouſly, as well without ſmoak and ſootineſs as without too intenſe a flame, and that it may paſs the pneumonic Veſſels freely, and without any hindrance or leaving of recrements. Wherefore a moiſt, fenny, and cloſe air, as it is healthful to none, ſo to them that cough it is eſpecially hurtful; on the contrary, a ſerene and mild air, moderately injoying the Sun and wind, as it is healthful to all perſons, ſo it is friendly to all conſumptive perſons. As to other conditions of the air, ſome eſcape a Cough, or loſe it living in mountainous places expoſed to the Sun, where the impendent Atmoſphere being free from all thick, ſmoaky, and feculent vapours whatſoever, abounds with nitrous particles: for thoſe whoſe thick and feculent blood abounds with an impure Sulphur, to kindle this duly and to waſte the dreggineſs, there is need of a very thin and nitrous air. If the Lungs be not too tender, but firm and ſtrong, they endure the more fierce aſſaults of its particles; on the other ſide, they who have a thin and ſubtil blood, eaſily diſſolvable and endued with a more

pure

pure but very little Sulphur, and having tender and ſoft lungs, very ſenſible, and of a finer texture; theſe perſons being impatient of a nitrous and ſharper air, are moſt at eaſe and beſt in a thick and more ſulphureous one. Wherefore it conduces to theſe perſons, that they breathe the groſs and more fat air of a ſmoaky City; which to an impoveriſhed and more thin blood, doth afford Sulphur (which fails ſometimes) and alſo Nitre, and doth ſomething thicken and fix its ſubtile conſiſtence; moreover it dulls the ſubſtance or texture of a Lung too much ſenſible and more thin, and is a defence againſt the invaſions of a more ſharp and improportionate Air. It is manifeſt by frequent experience, that a thicker Air, provided it be ſulphureous, proves very benign to ſome phthiſical perſons (that I do not ſay to all.) It is a common obſervation, that a Conſumption ſeldom infeſts thoſe Regions either in *England* or *Holland*, where fires are nouriſhed by turff, and do breathe a very ſulphureous odour, yea rather thoſe places are chiefly wholeſom and frequently ſanative to perſons obnoxious to a Phthiſis, or labouring under it. To which we may add, that a ſuffumigation of Sulphur and Arſenic (which is filled with much Sulphur) is reputed for the curing of almoſt incurable Ulcers of the Lungs, although the laſt, yet the moſt efficacious remedy. Moreover add to this, that pectoral Medicines prepared of Sulphur are far to be preferred to any other; ſo that Sulphur is juſtly reported by Chymiſts to be the Balſam of the Lungs. By what order and by what means theſe Medicines do work, and ſo notably help in diſeaſes of the *Thorax*, we ſhall hereafter make diligent ſearch into: in the mean time that ſulphureous Air is found helpful to certain phthiſical perſons, the reaſon conſiſts in theſe two things; *viz.* in the firſt place, as we now intimated, from ſuch an Air ſuckt in there is help brought to the jejune and depauperated blood and to the tender Lungs. Secondly, that the ſulphureous Particles being ſuckt in with the nitrous, do provide againſt, or take away the acidities of any of the humours (by which their flowings and extravaſations into the Lungs do chiefly ariſe.) And for this reaſon it is that ſulphureous Medicines, being alſo taken inwardly, do confer ſo excellent a help to them that cough or are phthiſical: and therefore Sulphur, as I now hinted, hath the report of being the Balſam of the Lungs. For as balſamic things applied to an Ulcer or Wound extinguiſh the acidity of the Ichor there ſweating out and corrupting and paining the little Fibres, ſoon eaſe the pain, and afterwards heal the wound; ſo alſo the ſulphureous Particles, paſſed into the Lungs either with the air or with the blood, in as much as they provide againſt or aboliſh the acidities of all humors, *i. e.* the blood, the Serum, the Lympha, the nervous or nutritive Juice, they conduce to the prevention or cure of a Conſumption. We ſhall in what follows more at large declare the cauſe, when ſulphureous Medicines ſhall be particularly treated of.

A ſulphureous air healthful to ſome conſumptives.

Sulphurous Medicines chiefly agreeing.

The reaſon thereof diſcourſed.

The conjunct and procatarctic cauſes of a Phthiſis being thus handled, it will not be neceſſary to diſcourſe much touching the evident cauſes. For in what manner a cloſing of the Pores by cold, a ſurfeit or tipling, and other errours of ſeveral ſorts, in the ſix non-naturals, diſpoſe to thoſe diſtempers, and ſometimes preſently do bring them, is ſo clear, that it needs no explaining. Neither is there any reaſon we ſhould be long delayed about the Semiotical part of this diſeaſe; nevertheleſs it is fit we obſerve the divers ſtates or diſtinctive ſigns which certainly belong unto it. 1. When it is meerly a Cough. 2. When it begins to degenerate into a Phthiſis. 3. When it is a perfect and almoſt deſperate Phthiſis. From which things duly deſigned, the Prognoſtic of the above-mentioned affections will be very apparent.

The three times or diſtinct ſtates of a Cough.

1. And in the firſt place what belongs to a new Cough, and as yet alone, this taking its riſe from any cauſe whatſoever in bodies prediſpoſed to a Phthiſis, will ſcarce ever be free from the ſuſpicion of danger; but in a ſtrong man, and one who hath often before endured a Cough Scot-free, it will not be immediately to be feared: for when being ſtirred up from a more forcible evident cauſe, without Feaver or indiſpoſition of the whole body, it ſhall not be very troubleſom, then it meerly paſſes for a cold being taken, and is altogether neglected, or in a ſhort time is wont to be finiſhed without many or very conſiderable Remedies. Moreover if a ſmall Feaver with thirſt and want of appetite accompany this, there is hope that the blood being reſtored to its due temperament, the Cough then will ceaſe of its own accord: but if it be protracted longer, and not eaſily yield to vulgar Remedies, and produces much ſpitting, and that diſcoloured, it muſt not be any longer neglected, but be provided againſt by a method of healing, and by fit remedies and an exact courſe of diet. For then it may well be ſuſpected, that the Lungs being prejudiced in their ſtructure, do not circulate the blood entirely, but let fall the Serum and Lympha, and frequently

when new, there is no ſuſpicion of a Conſumption.

frequently the nutritive Juice; and moreover thoſe humors ſo laid aſide do putrifie; and from thence the blood is defiled, which by a reciprocal hurt prejudices again the Lungs.

When it begins to induce a Conſumption.

2. But if to a Cough growing daily worſe and worſe with plentiful and thick ſpittle, a languiſhing and pining of the whole body, loſs of appetite, difficult breathing, thirſt, and fervent heat of the blood be added, there is great cauſe of ſuſpicion that it is come at leaſt to the firſt limits of a Phthiſis (if not further.) Wherefore it will behove us to uſe all means, whereby the Lungs may be freed from the great quantity of matter heaped up together, and be defended from its continual aſſault or invaſion; and alſo that the maſs of blood may be cleanſed from all dregs, and reſtored to its due temperament whereby it may rightly contain its ſeroſities and other humors within it ſelf, or transfer them to ſome other place than to the Lungs.

When it becomes a confirmed Conſumption.

3. But if, beyond the ſtate of this diſtemper now deſcribed, plenty of ſpittle, and that diſcoloured, ſhall be daily increaſed, and all other things growing worſe and worſe, a dejection of the whole ſtrength, and a hectic Feaver with a continual thirſt, night Sweats, an Hippocratical face, an utter decay of the fleſh almoſt to the drineſs of a Skeleton, happen upon all theſe, then for the moſt part no place is left for Medicine, but only a dreadful prognoſtic; at leaſt all hope of Cure being waved, we muſt inſiſt upon Anodynes, whereby an eaſie death may be procured.

The curing method, and firſt againſt a beginning Cough.

What therefore belongs to the cure of a Cough in general, according to the three above-mentioned ſtates of this diſeaſe, a threefold method of healing ought to be appointed, *viz.* that bounds as it were being ſet, we may more diſtinctly preſcribe what is to be done for the cure of a Cough, whilſt being on this ſide the limits of a Phthiſis, it paſſes only for a cold catched. 2. What manner of healing to a beginning Phthiſis. 3. What to a Phthiſis conſummated, or deſperate.

1. Although againſt a new Cough for the moſt part there are uſed only Remedies Empirical, and ſcarce any of the common people but are furniſhed with many and divers of this ſort, which every where without the advice of a Phyſician very many confidently take, and without method, and give them to others: yet men of a delicate conſtitution, or inclining to a Conſumption hereditarily, or ſometimes formerly in hazard from a Cough, ought immediately to provide againſt the firſt aſſaults thereof, and readily betake themſelves to the Precepts of Phyſick; according to which, that the method of healing may be duly inſtituted, the curatory indications ſhall be chiefly theſe three; *viz.* 1. To appeaſe or take off the diſorder of the blood, from whence the fluxes of the Serum do proceed. 2. To derive the excrements of the blood and all *exuviæ*, apt to ſeparate from it, from the Lungs to the Pores of the skin, or to the urinary paſſages, and into the other Emunctories. 3. To ſtrengthen the Lungs themſelves againſt the reception of the Serum and other humors, and alſo to defend them againſt the invaſion of outward cold, whereby they are wont to receive further hurt. Upon each of theſe we ſhall treat a little more plainly.

Three indications.

The firſt reſpects the effervescence of the blood.

1. The firſt indication reſpects as well the boiling up of the blood, wherein by reaſon of the effluvia's reſtrained, it grows too fervently hot, and boils in the veſſels; as its diſſolution, whereby being ſolved in its conſiſtence, it lets go too much Serum and other humors from its embraces. For the taking away of both, a thin diet muſt be appointed, and, the injury from outward cold carefully declined, a little more ſweating ought to be procured, or at leaſt the accuſtomed reſtored. To this end let the Patient put on thick garments, and let him keep his bed or chamber, at leaſt let him hardly go out of his houſe, evening and morning let a ſmall breathing Sweat be provoked by Poſſet-drink boiled with Roſemary or Sage. If notwithſtanding all this the Cough increaſes, Phlebotomy, if the ſtrength and conſtitution will bear it, is often uſed with ſucceſs: after which Hypnoticks for the moſt part help, in as much as they retard the motion of the heart and conſequently the too precipitate courſe of blood: moreover they cauſe it to circulate in the pneumonic Veſſels gently and mildly without any great throwing out its ſeroſities, and to ſend away what is ſuperfluous either by Sweat or Urine. To this purpoſe pectoral Decoctions are alſo to be adminiſtred, in as much as they deſtroy the acidity of humors, and hinder the diſſolution of the blood, and its melting into ſeroſities. By the like reaſon and manner, Medicines prepared of Sulphur do ſo ſignally help againſt a Cough.

The ſecond reſpects the derivation of the Serum and other excrements from the Lungs.

The ſecond indication, *viz.* that the Serum and other recrements of the blood, derived from the Lungs, may be evacuated by other ways, is performed by Diaphoretics, Diuretics, and mild Purgers; which ought to be mixed with other Remedies,

or

or now and then uſed alone. Wherefore after Phlebotomy we uſe to preſcribe a gentle Purge, and ſometimes to repeat it. Among the Ingredients of the pectoral Decoction let the Root of Chervile, Butchers-broom, Elicampane, and other things that provoke Sweat and Urine be put. Hog-lice, volatile Salt of Amber, and other fixed Salts and Powders of Shells made into Pills with Turpentine are often given with ſucceſs.

The third intends the ſuppreſſing the Catarrh and ſtrengthing the Lungs.

The third indication, that the Lungs and their paſſages might be defended againſt the flowing of humors, the encountring of cold, and the ſuppreſſion of the Catarrh, as they commonly call it, is performed by Linctus's, Lohochs, and other private Remedies, and chiefly reſpects two things; *viz.* that the mouths of the Veſſels and Glandules opening into the *Trachea* be ſhut with moderate Aſtringents, leſt they ſhould too much caſt out the ſeroſities into it: and ſecondly, that the ſides of the Tracheal paſſages may be made ſmooth and glib, that neither from the pouring out of the ſharp Serum, nor invaſion of any outward cold they may be offended, and continally provoked into a troubleſome Cough; and moreover when thoſe paſſages are made ſlippery enough, the ſpittle ſometimes obſtinately cleaving to their ſides, might be the more eaſily coughed out. For the firſt intention it is, that Conſerve of red Roſes, Olibanum, Maſtich, Lohoch of Pine tree, Syrup of Jujubes, of dried Roſes, of Cup-moſs, and other Aſtringents are often put into the forms of Pectoral Preſcriptions. For the ſecond intention Liquoriſh, with the divers preparations thereof, is reputed a famous Remedy againſt any Cough: for this purpoſe Syrups and Lohochs, and all other ſweet Pectorals ſeem to be ordained. To which is added Oyl of ſweet Almonds, either adminiſtred by it ſelf, or brought with pectoral Syrups after a long ſtirring of them together into a milk-form liquor.

Forms of Medicines which are moſt in uſe.

Theſe are the chief Therapeutic indications, together with the apt intentions of healing, which ſeem chiefly to be of uſe for a new Cough, while as yet we have no ſuſpicion of a Phthiſis, or at leaſt that it ſubſiſts without the manifeſt limits thereof; it now remains, after this general method briefly ſhadowed out, that we ſubjoin certain choice forms of Medicines appropriated to every intention. Theſe, though they are manifold and of divers preparations, yet thoſe which are of chiefeſt note and moſt in uſe, are Mixtures, Linctus's, Lohochs, Tinctures, Balſams, Troches, Lozenges, Powders, Pills, Decoctions, and diſtilled Waters. Of each of theſe we ſhall ſet down ſome choice Receipts.

1. Mixtures.

Take of Syrup de Meconio, of Jujubes, of each an ounce and half; of powder of Olibanum a dram, the water of Earth-worms, or of aq. Hyſterica, or Peony compound a dram, mingle them. The Doſe is one ſpoonful at bed-time and after midnight.

Take of the water of Snails, of Earth-worms, of each an ounce and half; of the liquid Laudanum Tartariſated two drams, Syrup of Violets an ounce. The Doſe is one ſpoonful at bed-time.

Take of Snail-water ℥vj. Syrup of the juice of ground-Ivy, ℥iij. Flower of Brimſtone ʒß. mix them. The doſe is one ſpoonfull at bed-time, and ſoon in the morning.

Take of our ſyrup of Sulphur 4 ounces, Water of Earth-worms 1 ounce. Doſe 1 ſpoonfull after the ſame manner.

2. Linctus's.

Take of ſyrup of Jujubes, Maiden-hair of each one ℥ and half, ſyrup of red Poppys 1 ounce, mix them, to be lick'd with a Liquoriſh Stick.

Take Oyl of Sweet-Almonds freſh drawn, Syrup of Maidenhair, of each 1 ounce and half, white Sugar-candy 2 drachms, mix them by beating in a Glaſs-morter, or ſhaking them in a Glaſs Vial till it wax white.

3. Lohochs.

Take Conſerve of red Roſes 2 ounces and half, Lohoch Sanum 1 ounce and half, Spec. Diatragacanth. frig. 1 dram and half, flowers of Brimſtone half a dram, Syrup of Violets or red Poppyes as much as ſufficeth, let it be made a ſoft Lohoch. Doſe 1 dram and half at night and early in the morning; at other times to be licked with a Liquoriſh ſtick.

Take of the powder of the leaves of Hedge-muſtard, or Rockets, 1 ounce and half, clarified Honey 4 ounces, mix them for a Lohoch, let it be adminiſtred after the ſame manner. It agrees with cold Conſtitutions.

4. Tinctures.

4. Tinctures.

Take of Tincture of Sulphur, without empyreuma 3 drams, Dose from 6 drops to ten in the evening, and early in the morning in 1 spoonfull of Syr. of Violets, or of the juice of ground-Ivy; I scarce know a more excellent remedy for any Cough, provided there be no feaver.

Take of Tincture of the Sulphur of Antimony 2 drams, Dose 20 drops evening and morning in one spoonful of the pectoral Syrup.

Take of the Tincture of Gum Ammoniack (prepar'd with the Tincture of Salt of Tartar) 1 ounce, Dose from 15 drops to 20. After the same manner the Tinctures of Galbanum, Assa fœtida, Gum of Ivie (prepar'd after the same manner) are proper for a Cough in any cold constitution.

5. Balsams.

Take of Opobalsamum 2 drams, Dose from 6 drops to ten in a spoonfull or two of Hyssop, or Penny-royal, or any other Pectoral water.

Take of the Balsam artificially distill'd, commonly call'd the Mater Balsami, *two drams, Dose from 6 drops to ten in one spoonfull of Syrup of Violets or Canary Wine evening and morning.*

Take Balsam of Sulphur two drams, the dose from five drops to ten after the same manner.

Take of Balsam of Peru *one dram, Dose from two drops to 4 or 6 in Conserve of Violets.*

6. Troches.

Take of the Species of Diatragacanth. frigid. ℈ß. Liquorish ℥j. flower of Sulphur ʒij. flower of Benzoin ʒj. Sugar Penids ℈iij. make a Paste with the dissolution of Gum Tragacanth in Hyssop-water, form it into troches of the weight of ʒß. Take one often in the day or in the night.

Take of the seeds of white Poppies ʒvj. of the powder of the flowers of red Poppies ʒj. extract of Liquarish *℥ij. milk of Sulphur ʒß. Sugar Penids ℈ij. with mucilage of Quince-seeds make a Paste, and form it into troches.*

Take of the Species Diaireos, *of the lung of a Fox, of each ʒß. Sugar Penids ℈ij. with the dissolution of Gum Tragacanth, make them into Troches.*

Take of powder of Elicampane, Anniseeds, Liquorish, of each ʒij. flower of Brimstone ℥j. of Tablet Sugar ℈iß. juice of Liquorish dissolv'd, as much as will suffice, make Troches.

7. Lozenges.

Take of the Species Diatragacanth. frigid. ʒiij. powder of the flowers of red Poppies, milk of Sulphur, of each ʒß. of Sugar dissolv'd in Poppy-water, and boyl'd to make Tablets, ℈iiij. form lozenges of ʒß. weight.

Take of Species Diaireos, *of the lung of a Fox, of each ʒiij. flower of Brimstone, powder of Elicampane of each ʒß. of the whitest Benzoin ℥j. make them in a fine powder, adding of Oyl of Anniseeds ʒj. Sugar dissolved, and boyled to a height to make lozenges ℈viij. for lozenges of ʒß. weight.*

8. Powders.

These though more seldom, yet are sometimes given with succes in a Cough, and pneumonic distempers.

Take of the tops of Ground-Ivy somewhat reddish, a sufficient quantity, bruised let them be form'd into a Cake, which dryed presently in the hot Sun, reduce into fine powder, and keep it in a glass. This Plant keeps its virtue with smell and taste longer than any either Conserves or Syrups, and greatly profits in a grievous and pertinacious cough. Take from ʒß. to a dram, in distill'd water, or pectoral decoction twice in a day.

After

After the ſame manner Powders of other pectoral Plants are prepared, and taken with benefit.

Take of Cup-moſs or chin-cups ℥iij. milk of Sulphur ℥ j. Sugar-candy ℥ß. make a powder; the doſe from ℈ j. to ℥ſs. twice in a day. This powder is given with great benefit to thoſe labouring with a chin-cough.

Take of the flour of Brimſtone, Olibanum, *Ceruſe of Antimony, of each ℥ ij. divide it into* xii. *parts, take one part in the morning, and another in the evening in a ſpoonfull of a convenient vehicle.*

9. Pills.

Take of Aloes roſata, *or rather of* Ruffus's *his Pill, flower of Brimſtone of each one dram and half, flowers of Benzoin ℈ j. Juice of* Liquoriſh *diſſolv'd in as much Snail-water as will ſuffice to make a maſs, form it into ſmall pills to be taken 4 at night, to be repeated every or every other night.*

Take of powder of Elecampane, Liquoriſh, *flower of Brimſtone, of each one dram, flowers of Benzoin half a dram, Tarr as much as is ſufficient, form it into ſmall pills, the Doſe 3 or 4, evening or ſoon in the morning.*

Take of Millepedes or Hogs-lice prepared ℥ ij. the powder of the ſeeds of Nettles, Burdock of each half a dram, Oyl of Nutmegs diſtilled ℈ j. Salt of Amber half a dram; Juice of Liquoriſh *what will ſuffice, form it into ſmall Pills, take three in the morning and in the evening.*

10. *Decoctions.*

Theſe are taken either by themſelves, or with the addition of Milk. Among thoſe which are of the firſt kind, 1. The Pectoral Decoction according to the *London Diſpenſatory*, offers it ſelf. Which is taken twice a day from ℨ iiij. to vj. or ℨ viij.

Take of the leaves of Ground-Ivy, white Maiden-hair, Harts-tongue, Coltsfoot, Agrimony, of each one handfull, Roots of Chervil, *Knee-holm, of each one ounce, Carthamus and ſweet Fennel ſeeds, of each half an ounce, boyl them in 6 pints of Spring-water to the conſumption of half, adding towards the end* Liquoriſh *three drams, Raiſins ſtoned two ounces, Jujubes, n° vi. or clarified Honey three ounces, make an Apozeme, clarifying it with the white of an Egge; Doſe 6 ounces warm, 2 or 3 times in a day.*

Decoctions taken with Milk, are uſed morning and evening inſtead of Breakfaſt and Supper, according to the manner following.

Take the flowers of greater Daiſies one handfull, three cleanſed Snails, half an ounce of candied Eringo roots, Barly 3 drams, boyl them in a pint and half of water to a pint. Take 6 or 8 ounces warm, adding a little milk; and afterwards the quantity encreaſed by little and little.

After the ſame manner, Cup-moſs, Ground-Ivy, St. *John's*-wort, and other pectoral herbs are boyl'd and taken with Milk.

The Decoction of Woods often does conduce much to the cure of a ſtubborn Cough, eſpecially if appointed in the place of Beer, for ordinary drink, and taken for ſome time.

Take of the roots of Sarſaparilla 4 ounces, China two ounces, white and red Sanders of each half an ounce, ſhavings of Ivory and Harts-horn of each 3 drams, let them be infuſed, and boyled from 8 pints of Conduit-water to 4, adding Liquoriſh *6 drams, Raiſins ſtoned an ounce and half; in a phlegmatick or colder conſtitution, adde of ſhavings of* Lignum vitæ.

11. *Diſtilled Waters.*

Every one may compound manifold and divers forms of theſe as occaſion requires, and appoint according to the conſtitution of the patient, ſometimes ſimple Milk, ſometimes Milk with ſome part of Wine, ſometimes Ale, or *Brunſwick* Mum. For a Sample we will preſcribe the form of theſe.

Take

Take of the leaves of ground-Ivy, Hyſſop, Penny-royal, of each four handfulls, of Snails half-boyl'd in their ſhells two pounds, Nutmegs ſliced no. vj. *Upon all being cut ſmall pour eight pints of freſh milk, let it be diſtilled in the common Organs,* i. e. *a Pewter-Still.*

The doſe 3 *ounces twice or thrice in a day by it ſelf or with ſome other Medicine.*

Every doſe let it be ſweetned when it is taken with Sugar-candy, or with the ſyrup of the juice of Ground-Ivy.

In a conſtitution leſs hot, eſpecially if there be no fervent heat of the blood or *Præcordium*, to ſix or ſeven pints of Milk, adde one pint or two of Canary wine; and in a phlegmatick or old body, inſtead of Milk let the *Menſtruum* be Ale or *Brunſwick* Beer, *i. e.* Mum.

Moreover, in Winter-ſeaſon when Snails cannot eaſily or ſcarcely be procured at all, there may be ſubſtituted in their ſtead Lambs or Sheeps Lungs, alſo ſometimes Calves, being half-boyl'd and cut ſmall, with the forementioned ingredients, and a fit *Menſtruum* being added, let them be diſtilled in common Organs, or Roſe-ſtills.

The convulſive Cough of children call'd the Chin-cough.

To this form, treating of a Cough not yet arrived to a Phthiſis, ought to be referred the convulſive or ſuffocating Cough of children, and in our Idiome called the *Chin-cough*. This aſſaults chiefly Children and Infants; and at certain ſeaſons, *viz.* Spring and Autumn eſpecially, is wont to be epidemical. The diſeaſed are taken with frequent and very fierce fits of Coughing, wherein namely the Organs of breathing do not only labour in pain, but alſo being affected convulſively, they do variouſly ſuſpend or interrupt their actions; but for the moſt part the Diaphragma convulſed by it ſelf, or by the impulſe of other parts, doth ſo very long obſtinately continue the Syſtole, or Diaſtole, that Inſpiration, or Expiration being ſuppreſs'd for a ſpace, the vital breath can ſcarcely be drawn; inſomuch that coughing as being almoſt ſtrangled they hoop, and by reaſon of the blood ſtagnating, they contract a blackneſs in their countenance; if perhaps, thoſe organs not in ſuch a meaſure convulſed, they are able to breathe any thing freer, notwithſtanding they are forced always to cough more vehemently and longer, untill they wax faint.

The reaſon thereof.

The formal reaſon or conjunct cauſe of this diſeaſe, conſiſts in theſe two things, *viz.* that there is preſent a quick and vehement irritation of the lungs, whereby they are almoſt continually incited to throw off ſomething troubleſom by Cough; and alſo that the motive parts of the *Thorax*, *viz.* the Nerves and nervous fibres being prediſpoſed to convulſions, as often as they are irritated, do excite a Cough not regular but convulſive, and ſuch as is oppoſite or injurious to the uſual function of breathing.

The cauſe partly a Catarrh.

The matter provoking the lungs ſo frequently into a Cough ſeems to be the *Serum*, unceſſantly ſoaking out of the maſs of blood, by reaſon of its frame being too much looſened, and troubling the parts belonging to the breaſt, inaſmuch as it deſtills as well through the tracheal arteries into the hollowneſs of *aſpera arteria*, as that it is poured in plentifully through the pneumonic arteries into all the open paſſages.

A convulſive diſpoſition of the parts of the breaſt.

The convulſive diſpoſition of the moving parts, as in other convulſive diſtempers, ſeems to proceed from a heterogene and elaſtic matter falling from the brain through the nervous paſſages, together with the nervous liquor, into the ſmall moving fibres of the breaſt; wherefore, when the ſpirits that are contained in thoſe little fibres, are ſtirr'd to perform violent motions of breathing out, they paſs into convulſive motions.

The prognoſtick of this diſeaſe.

What relates to the Prognoſtick of this diſtemper, this Cough although it be ſeldom very dangerous or mortal, yet it remains very difficult of cure; and frequently it rather ceaſes by change of the ſeaſon than is extinguiſhed by remedies. The cauſe whereof is, that here not, as in an uſual Cough, the blood onely ought to be altered, and its recrements to be derived out of the Lungs, to be conveyed to the habit of the body by ſweating, but moreover an amendment of the nervous juice ought to be procured.

Cures firſt Empirical.

About the curing of this diſeaſe, the way of healing uſed in other kinds of Coughs doth rarely profit here; wherefore old women and Empiricks are oftener conſulted than Phyſitians, and the rational curatory method being poſtponed and neglected, remedies for the moſt part onely Empirical are brought into uſe.

Among the many remedies of this kind, theſe two following are preferr'd to all others, and chiefly wont to be uſed; *viz.* Cup-moſs or Chin-moſs or Chin-cups, and the various preparations thereof and compoſitions are taken inwardly, and if there

ſhall

ſhall be need of any further medicine, that ſome Bugbear being preſented, the Child labouring with it may be caſt into a ſudden fright. But if the wiſhed ſucceſs be wanting to adminiſtrations of this ſort, Ptiſans, Syrups, Julips, or Decoctions, and other pectoral helps are rejected, and frequently they deſiſt from all other Medicines, expecting untill the diſeaſe either at length of its own accord determine, or be cured by reaſon of the ſucceeding change of the year.

1. Chin-cups or Moſs is in moſt common uſe in our Countrey againſt the Coughs of Children, and is vulgarly enough known as to its form and manner of growing. It is of an aſtringent nature (as far as we gather by its taſte) and contains in it ſelf particles ſomewhat ſharp and biting, and ſmelling of plenty of volatile Salt: from whence we may ſafely conjecture that its uſe is to fix the blood, and to appeaſe the fluxes of *Serum*, and moreover by volatiliſing the nervous juice, to take away the convulſive diſpoſition. It is uſually adminiſtred in form of Powder, Decoction, and Syrup, according to the following Receipts. *Chin-cups a great remedy.* *The reaſon whereof is inquired.*

Take of Chin-cups in powder one dram, Sugar-Candy one ſcruple, mix them, divide it into three or four parts, take a doſe morning and evening with a fit vehicle.

Take of the ſame Cup-moſs two drams, milk of Brimſtone two ſcruples, powder of Anniſeeds one ſcruple, divide it into ſix parts to be taken as the former.

Take of the ſame Chin-moſs or cup-moſs one dram boyled in milk for one doſe; take it morning and evening. To thoſe with whom milk doth not agree, or to whom it little profits, let it be boyled in Spring-water or Hyſſop-water, or in any other pectoral water, and let it be given from two ounces to four, twice in a day, ſweetning it with Sugar or ſome fit Syrup.

Take of this Muſcus Pyxidatus or chin-moſs one ounce, boyl it in two pints of ſome pectoral water to the conſumption of half: To it ſtrained adde of Sugar-Candy one pound, and evaporate it in a gentle bath, to the conſiſtence of a ſyrup.

2. The other remedy for the convulſive Cough is wont to be, that they be caſt into ſome ſudden fright; from hence, whenas medicines effect leſs, with the vulgar it is a familiar practice, that, to fright them, while a great Mill is driven about with a ſcreeking noiſe, and a dreadful aſpect of the wheels, the diſtempered be put into the Trough or Receiver of the Grain or Corn, and from thence the ſudden cure of this diſeaſe ſometimes happens. The reaſon whereof without doubt conſiſts in this, that the Animal ſpirits being put to flight and forced into freſh diſtractions, they relinquiſh their former diſorders; moreover, the convulſive matter is either diſſipated by that diſturbance, or is forced into other nerves where it is leſs troubleſome. *Frights profit in this Cough.*

The Empirical cure of this diſeaſe being deſcribed after this manner, together with the remedies vulgarly uſed, and the rendring a reaſon of the cauſe at leaſt probably unfolded, from hence it will be lawfull to deſign a rational method of curing, and perhaps more efficacious againſt childrens Coughs of this kind. Wherefore, in ſuch a caſe ſometimes ſucceſſefully enough I have preſcribed according to the following forms. And ſeeing we ought to begin with purging, *The rational cure.*

Take of the ſyrup of Peach flowers one ſpoonfull, of Aqua Hyſterica one ſcruple, mix it, and let it be taken with government. Purging.

Or, take of Mercurius dulcis 6 *grains, Scammony prepared with Sulphur, Reſine of Jalap, of each three grains; make a powder, give it in a little Pulp of a preſerv'd Cherry to a lad ſix years old, and let the doſe be encreaſed or leſſened according to the age, let the Purge be repeated in 6 or 7 days.*

If the Patient (as it often happens) be prone to vomit, Take of Oxymel of Squils 6 drams, Salt of Vitriol 4 grains, mix it for a child of ſix years old, and according to this proportion let the doſe be accommodated to others. I have known a Vomit of this kind taken every morning for four or five dayes together with good ſucceſs.

Veſicatories or Medicines drawing bliſters are in daily uſe, and are applyed ſometimes to the *Nucha* or nape of the neck, another while behind the ears, then to the inſide of the arms near the arm-pits, and as ſoon as theſe ſores begin to heal in theſe places, let others be raiſed in other places. *Veſicatories.*

Inſtead of Beer let the following Decoction be uſed for ordinary drink.

Take China-roots an ounce and half, of all the Sanders of each half an ounce, the ſhavings of Ivory, and Harts-horn of each three drams, let them be infuſed and boiled in ſix pints of ſpring-water to the conſumption of half, adding Raiſins ſtoned an ounce and half, Liquoriſh three drams.

Mixtures. *Take of Spirit of Gum Ammoniac with Salt Armoniac a dram, Syrup of Chin-moſs three ounces, Aq. hyſterica an ounce: the doſe is a ſmall ſpoonful in the evening and morning faſting.*

Or, *Take of tincture of Sulphur two drams, doſe three drops in the evening and firſt in the morning in a ſpoonful of the Syrup of Cup-moſs.*

To ſome endued with a hot conſtitution, and while they cough their countenance is ſpread with redneſs, or rather blackneſs, I have preſcribed Phlebotomy or drawing of blood with Leeches to two or three ounces with good ſucceſs.

Take Hog-lice living and cleanſed two ounces, powder of Aniſeed a dram, Nutmeg half a dram, fine Sugar an ounce, bruiſe them together, and pour upon them ſix ounces of Hyſſop-water, of Magiſtral Snail-water two ounces, ſtir them together a little, and preſs them out hard: the doſe two or three ſpoonfuls twice a day.

Hitherto of a Cough and its Remedy, while it is only an entrance to a Conſumption; now it remains to treat throughly of the diſtemper it ſelf, having paſſed the limits of this dangerous diſeaſe, and to deſign a method of curing, and the forms of remedies, which are proper to heal an inveterate Cough, when either being neglected, or not eaſily giving place to remedies, it begins to degenerate into a Phthiſis; namely when it arrives to that ſtate, that the blood being diſſolved in its conſiſtence, doth not only pour out the ſuperfluous Serum, but alſo the nutritive Juice, and perhaps the nervous, the Lympha, and other its ſuperfluities on the Lungs, and lodges them within its paſſages; and in the mean time the corruption of the Lungs is ſo much increaſed, that the little Bladders being diſtended, or many of them broke into one, ſo that a ſolution of continuity or an Ulcer being cauſed, a greater plenty of corruption is daily heaped in; and moreover the matter in that place gathered together, becauſe it is ſuffered to abide there long, putrifies, and for that reaſon doth ſtill more corrupt the Lungs themſelves, and defile the blood flowing through. In this caſe the Therapeutical indications ſhall be chiefly theſe three: *viz.* in the firſt place to ſtop the diſſolution of the blood, which is the root of all this evil, and to make proviſion that it pour not out the matter any longer in ſuch abundance upon the Lungs. Secondly, by expectorating the purulent matter heaped up within the Lungs, and to evacuate it quickly and ſufficiently. Thirdly, to ſtrengthen and dry the Lungs looſned from their unity, or being too looſe or moiſt or otherwiſe infirm, leſt they be daily more and more corrupted, and give more reception to the morbific matter. Every of theſe indications ſuggeſts various intentions of healing, and requires remedies of divers kinds and many ways of adminiſtrations. The chief of which we ſhall here briefly treat of.

Of what ſort the beginning of a conſumptive Cough is.

Three indications concerning its cure.
1. *To ſtop the diſſolution of the blood.*
2. *To draw out the filth from the Lungs.*
3. *To heal the Lungs hurt.*

1. Therefore what the firſt indication ſuggeſts, that the diſſolution of blood may be prohibited, theſe three things (as much as may be) ought to be procured: *viz.* Firſt that the maſs of blood may contain and aſſimilate whatſoever of nutritive juice it may be furniſhed with; and that it be ſo proportioned, that it neither offend in quality nor in quantity. Secondly, that the acidities either generated in the blood, or poured into it from ſome other place, may be ſo deſtroyed, that the blood retaining as yet its mixture or temperament, may not be prone to flowings and pourings out. Thirdly and laſtly, that all the excrements produced in the blood may be derived from the Lungs to other Emunctories and places of Evacuations.

The firſt indication ſuggeſts three intentions of healing.

The firſt intention, that the nutritive juice may be proportioned to the blood and aſſimilated by it.

1. As to the firſt intention of healing, *viz.* that the nutritive Juice may be proportioned to the blood, let it be adviſed before all things, that they who cough and are phthiſical abſtain chiefly from drink, and that they take liquid things in a very ſmall quantity; for that the blood being infirm in its temperament, ſo long as it is not too much imbued with freſh juice, may be able to digeſt ſmall portions, and retain it within its own conſiſtence. Moreover, let that freſh juice conſiſt of ſuch kind of particles, which being mild and thin, may be tamed by the blood, and aſſimilated without any effervescence or heat. Wherefore Aſſes milk, alſo ſometimes Cows or Goats milk; alſo Water-gruel, Cream of Barley, Ptiſan, Almond-milks, and other ſimple nouriſhments will better agree and nouriſh more than Fleſh, Eggs, and Gelly-broaths,

broaths, ſtrong Ale, Wine, or any other kind of richer fare. Secondly, that the blood retaining its own temperament, be not eaſily diſſolved into ſeroſities injurious to the Lungs, it behoves that as well the acidities of it ſelf as of other humors mixt therewith, and chiefly the nervous and limpid ones be deſtroyed: which intention Medicines prepared with Brimſtone will beſt accompliſh; which for that cauſe in this caſe (provided a hectic Feaver be not preſent) may be more frequently and in abundance taken. Wherefore the Tincture, the Balſam, the Syrup, the Flowers, and Milk of Sulphur in ſomewhat a large Doſe may be exhibited twice or thrice a day. For the ſame reaſon traumatic or vulnerary Decoctions, alſo Decoctions of the pectoral Herbs commonly ſo called, alſo of the Woods, are to be taken inſtead of ordinary drink. Moreover the Powder of Crabs eyes, Hog-lice, and other things endued with an Alcali or volatile Salt are often adminiſtred with great ſucceſs. The third intention of healing reſpecting the firſt indication, *viz.* that the ſuperfluous dregs of the depraved blood, (if they ſhall be very much predominant) being commanded out from the Lungs, may be diſcharged by other Emunctories, ſuggeſts very many ways to be uſed for their diſpatch. For beſides Phlebotomy, Diureſie, and ſometimes a gentle Purgation (which take place in all Coughs, yea in the beginning of a conſumptive Cough, or Phthiſis) hither alſo ought to be referred Baths, taking in a more warm air whereby they may more freely tranſpire, alſo Frictions of the extreme parts, Dropaces, Iſſues, Bliſterings, or Depilatories, Errhines, Gargles, and other private or public ſluices either of humors or vapors.

2. That the acidities of the blood and other humours be taken away.

3. That the excrements of the blood be drawn off from the Lungs.

The ſecond indication in the beginning of a Phthiſis, *viz.* that the conſumptive matter laid aſide within the Lungs may be eaſily and daily evacuated, is performed by expectorating Medicines. Theſe are ſaid to operate after a twofold matter, according to which their virtue is conveyed two ways to the Lungs. For of thoſe being taken by the mouth, ſome immediately diſmiſs their active particles into the *Trachea*, which partly by making the way ſlippery, and looſning the matter impacted, and partly by provoking the excretory Fibres into Convulſions, do procure expectoration: in which number are chiefly accounted Linctus's and Fumigations. The expectorating Remedies of another kind, which deſervedly are accounted more available, do exerciſe their energie by the paſſage of the blood. For whereas they conſiſt of ſuch kind of particles which cannot be digeſted and aſſimilated by the maſs of blood, being ſpread through the blood, becauſe they cannot be mixt with it, they are preſently again exterminated, and ſo penetrate from the pneumonic Arteries into the tracheal paſſages; where lighting on the matter they divide, and attenuate, and ſo diſturb it, that the little fibres being irritated from thence, and ſucceſſively contracted while they cough, the contents of the Trachea and of its little bladders are ejected upwards into the mouth. Medicines proper for this uſe beſides Sulphur and the preparations of it, are artificial Balſams diſtilled with Oil of Turpentine, Tinctures and Syrups of Gum Ammoniac, Galbanum, Aſa fœtida, Garlick, Leeks, and ſuch like yielding a ſtrong ſcent; from which alſo Lohochs and Eclegma's are prepared. And theſe work both ways, partly by ſlipping into the Trachea, and partly by entring the Lungs by the circulation of the blood, and aſſault the morbific matter both before and behind, and ſo exclude it with the greater force.

Second indication requires expectorating Medicins.

3. What belongs to the third indication, *viz.* that the frame of the Lungs being hurt, or their conſtitution vitiated, may be either reſtored or amended; ſuch things are of uſe as reſiſting putrefaction do cleanſe, heal, dry, and ſtrengthen; to which intent alſo Remedies prepared of Sulphur, Balſamics and Vulneraries do agree. Hence ſome Empirics do not only ſucceſsfully preſcribe the ſmoak of Sulphur vivum, but alſo of Auripigmentum, to be ſuckt through a Pipe or Funnel into the Lungs. Moreover it is for this reaſon, that change of air and ſoil, *viz.* from Cities to the Country or ſulphureous air, or the paſſage from one Region into another that is hotter, is of ſuch a ſignal advantage.

Third indication is performed by Balſamicks and vulneraries.

Hitherto of the Method of Healing, which ſeems to be of uſe againſt the more painful Cough, or Phthiſis beginning; now it remains according to all thoſe curatory indications to ſubjoin certain ſelect forms of Medicines, which alſo, according to the way of healing deſcribed above in a ſlight Cough which is ſhort of a Phthiſis, we ſhall diſtinguiſh into certain ranks, *viz.* which are Mixtures, Linctus's, Lohochs, Tinctures, Balſams, Troches, Lozenges, Powders, Pills, Decoctions, and diſtilled Waters. We ſhall ſet down ſome Examples of each of theſe: whereto alſo may be referred ſome of the forms of Medicines before deſcribed for a beginning Cough, and not as yet conſumptive.

Forms of remedies for a conſumption.

1. Magiſterial Medicines and Syrups.

Mixtures.

Take of our Syrup of Sulphur three ounces, water of Earth-worms an ounce, tincture of Saffron two drams, mingle them. Take one ſpoonful at night, and firſt in the morning.

Take of Syrup of the juyce of Ground-Ivy three ounces, Snail-water an ounce, flour of Brimſtone a dram, mix them by ſhaking. The Doſe one ſpoonful at night and morning.

Take of tincture of Sulphur two drams, Laudanum tartarizated a dram, Syrup of the juice of Ground-ivy two ounces, Cinamon-water two drams: the doſe one ſpoonful at bed-time, and if ſleep be wanting, towards morning.

Syrupus Diaſulphuris.

Syrups.

Take of Sulphur prepared after our manner half an ounce, beſt Canary wine two pints, let them be digeſted 28 hours in a water or ſand Bath; which being done, take of the fineſt Sugar two pounds diſſolved in Elder-flower-water, and boil to a height to make tablets: afterwards pour to it by little and little Wine coloured with Sulphur and warm, let it boil a little on the fire, ſtrain it through woolen. You will have a moſt delicate Syrup of a gold colour, and for coughs and other diſtempers of the lungs (where a hectic Feaver and heat of the Præcordium is abſent) moſt profitable: the doſe a ſpoonful morning and evening by it ſelf or with other Pectorals.

Syrup of Garlick.

Take ten or twelve cloves of Garlick ſtript from the little skins, and cut into ſlices, Aniſeeds bruiſed half an ounce, Elicampane ſliced three drams, Liquoriſh two drams, let them digeſt for two or three days in a pint and half of ſpirit of Wine cloſe and warm; ſtrain it clear and hot into a ſilver diſh, and add a pound and half of fine Sugar, the diſh ſtanding upon hot coals, let the liquor be fired, and while it burns ſtir it; and ſtrain it through woollen, and keep it for uſe.

Syrup of Turneps.

Take Turneps ſliced and fine Sugar of each half a pound, put them in a glaſed pot a lay of Turneps and a lay of Sugar, the pot being covered with paper, put it into an oven to bake with the bread; when it is taken out, preſs the liquor, and keep it for uſe: the doſe one ſpoonful morning and evening.

Syrup of Snails.

Take freſh Snails with their ſhells n. xl. cleanſe them with a linen cloth, afterwards each being run through with a bodkin, let the open ſhell be filled with powder of Sugar-candy, and being put in a linen bag, let them be hung in a cellar, it will diſſolve into a Syrup and drop into a glaſs veſſel ſet under it: the doſe one ſpoonful twice or thrice a day in a convenient vehicle, viz. Milk-water or pectoral Decoction.

2. & 3. Linctus's and Lohochs.

Linctus's.

Take of conſerve of red Roſes three ounces, of our tincture of Sulphur two drams, mix them in a glaſs mortar: the doſe the quantity of a Nutmeg evening and morning. To this ſometimes to appeaſe a troubleſom cough add from half to a dram of powder of Olibanum.

Lohoch.

Take conſerve of red Roſes four ounces, flour of Brimſtone four ſcruples, fine oyl of Turpentine a dram, powder of Fox-lungs three drams, ſyrup of the juice of Ground-Ivy as much as will ſuffice to make a ſoft Lohoch, to be taken after the ſame manner, viz. morning and evening; alſo to be licked at other times with a Liquoriſh-ſtick.

Take powder of Sugar-candy four drams, tincture of Sulphur two drams, mix it in a glaſs mortar: take it after the ſame manner.

In the place of Tincture of Sulphur may be adminiſtred other balſamic Tinctures, *viz.* Balſam of Peru, Opobalſamum, Gum of Ivy, Guajacum, Amber, with many others, which either may be mixt with Conſerve of red Roſes, or with the Conſerve of the flowers of Colts-foot, or with Sugar-candy.

4, 5. *Tinctures* and *Balſams* of the ſame nature and compoſition, but in a larger Doſe are convenient in a Phthiſis, which we have above preſcribed for a beginning Cough.

Take

Take of Tar an ounce, Lime-water thrice cohobated two pints, diſtil it in a Bath to half; afterwards being filtrated, let it be drawn off to the conſiſtence of Honey in Balneo; to which pour half a pound of tincture of ſalt of Tartar, let it digeſt in a cloſe glaſs to extract the tincture: the doſe from 20 drops to 30 in a fit vehicle. After the ſame manner is prepared the tincture of the black oyl of Soot, liquid Amber, liquid Storax, and many others. Tinctures.

Take of our prepared Sulphur an ounce, adding Mirrh, Aloes, and Olibanum in treble quantity, draw off a tincture with oyl of Turpentine, alſo with rectified ſpirit of Wine: doſe from 15 drops to 20.

6, 7, 8. *Troches, Lozenges,* and *Powders,* becauſe they chiefly reſpect a Cough, are almoſt of the ſame nature and compoſition with thoſe before-deſcribed for a new Cough; unleſs that for the drying and healing of the Lungs things ſulphureous and Vulneraries are required in a greater proportion.

Take powder of the leaves of Ground-Ivy a dram, flour of Brimſtone two drams, of Sugar penids a dram and half, with juyce of Liquoriſh diſſolved in Hyſop-water make troches of the weight of half a dram. Troches.

Take of Yarrow bruiſed and dried in the Sun half a dram, flour of Brimſtone, Olibanum, of each a dram; powder of dried red Roſes half a dram, Sugar diſſolved and boiled to a height ſix drams, oyl of Aniſeeds a ſcruple and half, make Lozenges of half a dram weight: take one three times or oftner in a day, and eſpecially evening and morning. Powder.

9. Pills.

Take a pint of the juyce of Ground-Ivy clarified in the Sun, flowers of Colts-foot dried, the tops of Hyſop, Sage, Pennyroyal, each a handful; Aniſeed, Caraway-ſeeds, ſweet Fennel-ſeeds bruiſed, each half an ounce; diſtil them in Balneo Mariæ to half; ſtrain it and diſtil it to the conſiſtence of Pills, by adding half a dram of juyce of Liquoriſh, powder of Elicampane, flour of Brimſtone, each three drams; flowers of Benzoin a dram, Balſam of Peru *half a dram, tincture of Sulphur three drams, tartarizated Laudanum two drams: make it into a maſs, and form it into ſmall Pills to be taken three or four evening, and firſt in the morning.* Pills.

10. *Decoctions,* as I have above preſcribed for a ſtubborn Cough, are uſed with ſucceſs againſt a beginning Phthiſis. In a caſe almoſt deſperate I have preſcribed the following Decoction to be taken twice a day, and alſo inſtead of ordinary drink with very good ſucceſs. Decoctions.

Take Lignum vitæ four ounces, China, Saſſaphras, each two ounces; of all the Sanders each an ounce, ſhavings of Ivory, Harts-horn, each three drams: infuſe them, and boil them in twelve pints of Spring-water to half, adding Liquoriſh an ounce, Raiſins ſtoned four ounces: ſtrain it.

11. *Diſtilled Waters,* ſuch as we have before preſcribed, are ſpecific here, whereto may be added Solenander-water of Hogs blood and Turpentine; alſo Balſamic Waters diſtilled from Turpentine with Pectoral Ingredients. Diſtilled Waters.

Take leaves of Ground-Ivy, white Horehound, Hyſop, Pennyroyal, each three handfuls; roots of Elicampane, Orris of Florence, *each two ounces; Turpentine diſſolved in Oyl of Tartar four ounces, Hyſop-water four pints, Malaga-wine two pints; diſtil them in a ſand Bath: let all the liquor be mixed, the Oyl ſeparated: the doſe two or three ſpoonfuls twice a day, with a ſpoonful of Syrup of Ground-Ivy.*

12. *In the laſt place* we muſt deſcribe the forms of Vapors and Fumes; the adminiſtration whereof doth uſe to profit more than any other remedies in a Phthiſis not yet deſperate, for that they arrive at the very Lungs, and ſo purge them by an immediate affect, dry them, and keep them from putrefaction, ſtrengthen and open all their paſſages. 1. Therefore a moiſt ſteam may be made after this following manner. Fumes and Vapours.

Take leaves of Hyſop, Ground-Ivy, white Horehound, each two handfuls; Elicampane two ounces, Calamus aromaticus half an ounce, Aniſeeds and Caraway-ſeeds, each an ounce: boil them in a ſufficient quantity of Spring-water: let the vapor of the hot ſtrained liquor be drawn by the lungs through a paper rolled up like a cone or funnel: and uſed morning and evening for a quarter of an hour. Formules of the former.

2. A fumigation or dry vapour, is made one while more mild out of meer Balſamics, another while more ſtrong out of Sulphurs, and ſometimes out of Arſenicals.

Forms of the more gentle Fume.

Take of Olibanum, white Amber, Benzoin, of each two drams, Gum Guaici, Balſam of Tolu *of each one dram and half, powder of red Roſes, and red Sanders, of each one dram to be ſtrewed upon burning coals.*

Of the more ſtrong.

Take Gum of Ivie, Frankincenſe, of each two drams, Flower of Brimſtone one dram and half, Maſtich one dram, with a diſſolution of gum Tragacanth, form Troches.

Arſenicals.

Take of white Amber, Olibanum, of each two drams, prepared Orpiment half an Ounce, Styrax, Labdanum, of each one dram and half, with ſolution of Gum tragacanth, make Troches for fumigation.

Smoak of Auripigment.

Mountebanks do ordinarily preſcribe the ſmoak of Arſnick to be ſuckt into the mouth, like Tobacco kindled in a Pipe, and ſometimes with good ſucceſs: Moreover, it is in practice with the Vulgar, to burn like Tobacco in a Pipe little bits of cloth ſtained with Arſenick (ſuch as wherewith the walls of Taverns are hung) and ſo ſuck the ſmoak into the conſumptive Lungs for cure.

Of a confirm'd Conſumption.

3. Theſe things being thus unfolded concerning a Cough, and a Phthiſis beginning, both as to what belongs to the Pathologie, and cure; it remains now laſtly to diſcourſe of a more painfull Phthiſis confirm'd, and almoſt deſperate; and to conſult what is to be perform'd, when the lungs being very much vitiated, and affected with one or more filthy ulcers, neither the air nor the blood do rightly paſs through them, but choak or corrupt the maſs thereof, by continually ſuggeſting filthy corruption; inſomuch that a hectick feaver and an Atrophie, by reaſon of nouriſhment being fruſtrated, infeſt the diſeaſed, with the loſs of all their faculties, and by daily weakening their ſtrength precipitate them to the grave. The moſt certain ſign of this diſeaſe growing deſperate, uſes to be accounted a pain very troubleſome with an inflammation of the throat; for this ſymptom argues a great putrefaction of the lungs, from whence the putrid *effluvia*'s exhaling are thrown about in the narrow paſſage of the throat, which wound and grievouſly irritate thoſe tender fibres there. In this caſe the cleanſing of the lungs, as alſo the drying up of the Ulcer are in vain deſigned: for all hotter Medicines ordain'd for thoſe purpoſes, and fit enough in the beginning of a Phthiſis, are not to be endured in a confirmed one; inaſmuch as augmenting the inflammation of the lungs, they procure a hectick feaver, thirſt, watchings, and other more painfull ſymptomes, or call them back afreſh. For truly in ſuch a ſtate of this diſeaſe where onely the prolongation of life is propoſed with a light toleration and an eaſie death; thoſe remedies help chiefly, which bridle the fervour of the blood, allay the heat in the *Præcordia*, and reſtore the ſprits, and gently cheriſh them. Hence for food, Aſſes Milk, alſo Water-gruel, Barly-broths, Cream of Barly, and for drink, Ptiſan, Emulſions, water of milk diſtilled with Snails and temperate pectoral herbs, are uſually of greateſt ſucceſs. Syrups and Linctus's, which appeaſe the inflammation of the throat and Lungs, and facilitate expectoration, but chiefly the more mild Hypnoticks, whereby moderate reſt may be procured, may be frequently or daily taken. The forms of theſe are common enough; but however according to our method, we will annex ſome of the more ſelect of each kind.

The formal reaſon thereof.

Forms of remedies in a deſperate Conſumption.

Decoctions.

Take of Barly half an ounce, candied Eringo roots 6 drams, parings of Apples one handfull, Raiſins ſtoned two ounces, Liquoriſh three drams, boyl them in three pints of ſpring-water to two, make a Ptiſan to reſtrain thirſt: take it 3 or 4 times a day, alſo in the room of ordinary drink if it agree.

Take the tayls of twenty Creviſes, candied Eringo roots one ounce, a cruſt of white-bread, Raiſins ſtoned two ounces, Liquoriſh 3 drams, boyl them in 3 pints of Spring-water to two, ſtrain it, and take 3 or 4 ounces three times a day. After the ſame manner is prepared the Decoction of Snails.

Diſtilled waters.

Take of Snails half-boyled and cut three pound, ground-Ivy 6 handfulls, Nutmegs ſliced numb. 6. crum of white-bread two pound, freſh milk 8 pounds, diſtill it in a Pewter Still. The ſame way is diſtilled the water of Creviſe-tayls. The doſe 3 or 4 ounces three times a day, ſweetned with pearl'd Sugar or Sugar of Roſes.

Hypnoticks.

Take ears of greeen Wheat as many as convenient, diſtill them in a common ſtill; drink three or four ounces three times a day, ſweeten'd with pearl'd Sugar.

Take

Take ſyrup de Meconio *three ounces, water of green Wheat 6 ounces, mix them, drink two or three ſpoonfulls at bed-time, every or every other night.* Hypnoticks.

Take Conſerve of Mallow-flowers wild or garden three ounces, Lohoch de pino *two ounces, Syrup of Jujubes two ounces, make a Lohoch, of which take often a dram and half or two drams.* Eclegma's.

What hitherto we have diſcourſed of concerning a Cough of every kind (whether it be ſolitary and ſimple, or the forerunner and companion of a Phthiſis) alſo what is to be preſcrib'd in every caſe touching the method of healing, it would be eaſily illuſtrated by the hiſtory of Cures, or by the Anatomical obſervations on thoſe that have dyed by that diſeaſe. For inſtances of this ſort, and very many examples are every where had, and happen daily; it pleaſes us here to annex a few of the more ſelect, out of the large choice of theſe, accommodated to the chief kinds of a Cough, and Phthiſis. And firſt I will endeavour to illuſtrate the type of a ſimple Cough by one hiſtory or two, and which takes its riſe of it ſelf, and is altogether void of the ſuſpicion of a Phthiſis.

The Hiſtory of a Cough threatning a Conſumption.

It is now many years ſince I took care of the health of a certain Student, obnoxious to a Cough from his tender years, and who was wont frequently to undergo the more painfull affections of it, and thoſe of long continuance. This perſon ſeemed of a melancholick temper, of a ſharp wit, of an indefatigable ſpirit, of a conſtitution indifferently ſtrong, but that his Lungs originally being infirm, did ſuffer when the blood diſſolv'd into ſeroſities. In Summer as long as he tranſpired freely, he lived healthily enough; but in the Spring and Autumn, when the blood changing its temperament, thoſe ſerous fluxes came upon him either of their own accord, or from any ſleight occaſion, he fell eaſily into a Cough with abundant and thick ſpittle; notwithſtanding this diſtemper frequently within ſix or ſeven dayes, as ſoon as the maſs of blood was purged throughly by the Lungs, vaniſhed leiſurely without any great uſe of remedies. But if to the aforeſaid occaſions of this diſeaſe were added ſome ſtronger cauſes, as chiefly the obſtruction of the pores, and errors touching his diet, ſometimes a more prodigious and ſtubborn cough, neither preſently nor eaſily yielding to remedies, and threatning nothing leſs than a Phthiſis, did come upon him, then manifeſtly the patient for the firſt days ſuffered light ſhiverings in his whole body, and the ſenſe of a Catarrh in his *Larynx*; afterwards by frequent coughing with thin ſpittle, together with a giddineſs, he was afflicted with numneſs of his ſenſes, and a dropping at his noſtrils.

In this ſtate his beſt remedy was wont to be, and frequently tryed with ſucceſs, to drink a little more freely generous Wine, and any other liquor very ſparingly: for ſo the acidity and fluor of the blood being ſuppreſſed, and tranſpiration procured more freely, he was much eaſed, and ſometimes recovered health in a ſhort time. Moreover at night and early in the morning he was uſed to take ſeven or eight drops of the tincture of Sulphur in a ſpoonfull of Syrup of Violets, or of the Juice of Ground Ivy, or

Take Conſerve of red Roſes three ounces, ſpirit of Turpentine two drams mingled, the doſe the quantity of a cheſnut evening and morning.

If that theſe remedies together with the *Canary* Antidote and thin diet effected little, the diſeaſe not being ſo cured, ſpinning out into a long period, and preſſing him ſharply for many weeks, yea ſometimes months, it reduced the ſick to a remarkable leanneſs, and to the very brink of the Grave. For then the Cough daily encreaſing and being very troubleſome, did very much impede and break his ſleep, his ſtrength languiſhed, his appetite was dejected, heat and thirſt moleſted him; in the mean time ſpittle every day encreaſed, and was caſt forth in great plenty; ſo that not onely the *Serum* of the blood, and the recrements, but alſo the nutritive Juice, and the drainings of the ſolid parts being continually poured out upon the lungs, turn'd into corruption, which was abundantly cough'd out; moreover his breath was difficult, his joints very infirm, and his fleſh very much conſumed.

When of late our patient laboured after this manner, we preſcribed the following method, and remedies, by the continued uſe whereof at length he recovered his health. Firſt of all, a thinner diet being appointed him, and for the moſt part Ale being forbidden altogether, he took twice in the day of the following Apozeme about ſix ounces warm, and a little at other times cold to reſtrain his thirſt.

Take

Take of the roots of China two ounces, Sarsaparilla three ounces, white and yellow Sanders of each one ounce, Ivory and Harts-horn of each three drams; infuse and boyl them in 8 pints of water to half, adding Raisins of the Sun 3 ounces, Liquorish 3 drams, strein it, and keep it for ordinary drink.

Take tincture of Sulphur three drams, take from seven drops to ten, at night and in the morning, in a spoonfull of syrup of Violets, or of syrup of the juice of Ground-Ivy.

When he began by continual use to nauseate this Medicine, in its place the following Eclegma was appointed.

Take conserve of red Roses three ounces, spirit of Turpentine two drams, mix them; the dose is one dram, at the same hours.

Afterwards instead hereof the following Powder was sometimes taken.

Take of the powder of the leaves of ground-Ivy dryed in the Summer Sun three ounces, Sugar-candy half an ounce, mix them, the dose half a spoonfull twice in a day, with three ounces of the following water.

Take Ground-Ivy 6 handfulls, Hyssop, white Hore-hound, of each 4 handfulls, Lambslungs half-boyl'd and cut small, pour upon them eight pound of Posset-drink made with small ale, distill it in common Organs, the liquor being mixed, let it be sweetned to the taste as it is used with Sugar-candy or syrup of Violets.

Troches. To appease his almost continually troublesome Cough, he swallowed the following Troches, and sometimes a little of the extract of Liquorish.

Take of the species of Diatragacanth. frig. 3 drams, Anmise, Carue, sweet Fennel-seeds, of each half a dram, flower of Brimstone two scruples, flowers of Benzoin one scruple, extract of Liquorish dissolv'd in Hyssop-water; make a paste which form into Troches.
Or,

Take of Species Diaireos, è pulm. Vulpis, of each two drams, flower of Sulphur, of Elecampane, of each half a dram, Oyl of Anniseeds ℈ß. Sugar dissolv'd in a sufficient quantity of Penniroyal-water and boyl'd to a body ℥vj. form Lozenges of half a dram weight, let him eat one, swallowing it by degrees, as oft as he will.

In the midst of this course, although he was endowed with a weak pulse and more cold temperature, we breath'd a vein in his arm: moreover, with these remedies, the chiefest help accrued to him from the open air, which for the most part he daily enjoyed, either by riding on Horse-back, or in a Coach; for from hence he first began to recover his appetite, his digestion, and sleep; whereto afterwards a relaxation of the other symptoms did sensibly follow, till at length he recovered his entire health. As often as he was afflicted since then with a stubborn and tedious Cough, he used a method like this, and with the like success; and now although he lives altogether exempt from that distemper, notwithstanding he is constrained to decline carefully all occasions or causes whereby either the pores might be shut, or the flux of blood or its precipitation into serosities might be provok'd; which were chiefly his going by water on the *Thames* at *London*, and drinking of acid liquors, as Cider, French or Rhenish wine.

From the above-mentioned history, you may easily conceive both the means and the reason of healing of the Cough, (which caused by the fault of the blood, is without the limits of a Phthisis): The other follows, which illustrates the nature of the same distemper, when it chiefly proceeds from the nervous juice.

The second remarkable History. A Boy about ten years of age, of a hot temper and fresh countenance, from his infancy obnoxious to a frequent Cough, in his succeeding years sustained more grievous and lasting fits and assaults of this distemper, and by turns was used to labour with a strong and shrill Cough, without spitting, which almost continually afflicted him day and night, and so infesting him many days, yea weeks, brought the sick to utter weakness. Afterwards the period of his disease being come (which happened not but by consuming the store of the morbific matter) he again in a short time became healthy enough, and very free from any sickness of the Thorax: till the morbific matter (as it seems) being heaped again to great abundance, without any evident cause, the same distemper

A hooping Cough.

ſtemper returned and performed its Tragedy with its wonted fierceneſs. About its firſt beginning the Cough was troubleſom only morning and evening: afterwards the evil by little and little increaſing, he almoſt continually coughed whole days and nights, and if at any time ſleep happening of it ſelf, or by the uſe of Anodynes, afforded any truce, a more outragious fit of coughing ſucceeded his wakening. After this manner moſt frequently and fiercely coughing without any ſpittle, he laboured for three or four weeks, till he was brought to an extreme leanneſs and weakneſs; and then the ſickneſs leiſurely remitted, ſo that he coughed ſomewhat ſeldomer, and enjoyed moderate ſleeps; afterwards in few days growing very hungry, being quickly made full of fleſh and vigorous, he recovered his former health in a ſhort time. Fits of this kind more ſeldom infeſted him in Summer-ſeaſon, but in the reſt of the year, repeated three or four turns, and brought the ſick even into great hazard of life.

If diſquiſition be made of the nature, cauſes, and formal reaſon of this unwonted and as it were irregular kind of Cough, it is manifeſt it proceeds like all others, from the provocation of the Lungs; nevertheleſs as to the matter exciting, its ſeat, and manner of affecting it is doubted: becauſe neither thick ſpittle, nor plentiful thin (as is uſual in other diſtempers) is here caſt out; neither doth the Patient complain of feeling a Catarrh, nor of any weight of the Lungs. Wherefore, not as in a common Cough, does the ſerous humour either ſlowly or plentifully ſweating out of the Trachea or pneumonic veſſels into the little bladders or pipes of the Trachea, induce the afore-mentioned ſymptoms: But it is plain from thence that the paſſages of the *aſpera Arteria* are wholly empty of the ſerous or thick humour, becauſe the deep and ſounding Cough throws off nothing. Moreover, neither from the blood impacted in the Membranes of the Lungs, doth this Cough take its origine, becauſe neither feaver, nor thirſt, nor pain are preſent here as in a Peripneumonie. Beſides, neither doth the morbific matter ſeem to adhere to the nerves or muſcles appointed to the function of breathing; becauſe then beſides a Cough, Aſthmatical or otherwiſe convulſive fits would ſometimes urge with a ſenſe of ſtrangling; which notwithſtanding did not happen to our patient.

Having frequently and ſeriouſly meditated about the ætiologies of this very difficult caſe, I am at length induced to think, that a certain ſerous and ſharp matter, as being loaded with a ſcorbutical taint, falling from the head by the paſſage of the nerves, doth enter into the nervous fibres and Membranes of the lungs or Trachea; which cleaving throughly to them, is by degrees encreaſed to a fulneſs, and at length being chaf'd, and grown turgid with a perpetual provocation, creates ſo troubleſom a Cough. We have in another place declared the matter of this kind impacted in the Coats of the guts, and the neighbouring parts about them, not rarely to excite a ſcorbutical Colick, for many days, yea ſometimes weeks, infeſting them with vomiting and a moſt ſharp torment; and what elſe is this Cough, but a certain convulſive diſtemper of the lungs, whoſe taint notwithſtanding, according to the capacity of the part labouring, is impreſt rather and more on the motive, than on the ſenſitive Power. For the lungs however twicht and hurt, do ſuffer ſmall pain, or ſcarce any at all; notwithſtanding from any light occaſion, they are invaded by ſtorms and fits of coughing. Indeed we compare this diſtemper of coughing ſo much the rather to the Colick, becauſe the ſubjects of either of them, that is to ſay, the Trachea, and the guts, as to their coats, veſſels, little fibres and glandules, are after the ſame manner faſhioned.

The conjunct cauſe of the diſeaſe.

The chief cauſe of the Cough now deſcribed, depends upon the morbific matter heaped together within the little fibres of the rough arteries, to a provoking fulneſs; wherewith when they are loaded, firſt a quick and painfull breathing infeſts onely, with a mornings Cough; becauſe from the beginning onely ſome ſmall portion of that matter being diſquieted provokes the part: afterwards when the whole maſs thereof growing turgid, almoſt perpetually twitches the fibres, there follows a moſt troubleſom cough; which alſo being often repeated, endures a long ſeaſon; becauſe the morbifick maſs impacted in the parts affected, is neither preſently caſt off by the ſtrength of nature, nor eaſily gives place to any remedies.

For in all the fits of this diſeaſe, I have made tryal of various methods of curing, and of medicines of divers kinds, though with little ſucceſs. That diſtemper beginning at any time, is wont to make a long period, maugre all remedies. The medicines commonly called pectoral, as Syrups, Lohochs, Eclegma's, or Lambitives, have conferred little benefit to its cure; notwithſtanding ſometimes it hath ſeemed good to

admit of them into uſe for this purpoſe, that they might make ſlippery and moiſten the Lungs, leſt they run the hazard of being rent by a violent Cough, and their veſſels burſt aſunder: for ſometimes a more fierce fit troubling our ſick Patient, he hath been wont to cough out a little blood, though no thick ſpittle.

A gentle Purge both in the beginning and declination of this diſtemper hath ſucceeded well. Opening and diuretical Apozemes are ever adminiſtred with ſucceſs, both which he uſed enough through his whole courſe inſtead of ordinary drink. Evening and morning he took ſome drops of the Tincture of Sulphur with the Milk-water of Snails; late at night I was ſometimes conſtrained to adminiſter a Doſe of Diacodion or of liquid Laudanum: his belly for the moſt part looſe enough, that it ſeldom required Clyſters: in two of his fits he breathed a vein, whereby nothing of ſucceſs enſued.

The uſual method of curing. In the laſt fit, beginning about the Autumnal Equinoctial, which paſſed away a little more lightly and gently, this following method of healing was obſerved.

A Purge. Firſt of all this Purge was given, and after four days repeated. *Take of Mercurius dulcis ten grains, Reſine of Jallop four grains, mix and make a powder to be taken in a ſpoonful of Syrup of Violets.*

A Drink. *Take China-roots ſliced a dram, Graſs-roots three ounces, Chervil an ounce, candid Eringoes ſix drams, ſhavings of Ivory, Harts-horn, each three drams; Raiſins of the Sun ſtoned three ounces: boil theſe in three pints of Spring-water to two pints, ſtrain it, and uſe it for ordinary drink.*

A Mixture. *Take ſyrup of Jujubes two ounces, Diacodion an ounce, ſpirit of Salt Armoniac with Gum Ammoniac a dram, mix them: the doſe a ſpoonful at night and early in the morning. He was much relieved with this medicine, notwithſtanding he took it only every other or third day, and for change ſometimes a doſe of the tincture of Sulphur with ſyrup of Violets.*

The diſeaſe declining a Purge was twice repeated, and afterwards, recovering his health by degrees, within two weeks he became healthy enough. But when I beheld him not only obnoxious to frequent relapſes of coughing, but every fit to be irreſiſtible when it aſſaulted him, and its ſtay very long notwithſtanding the uſe of remedies, and all this threatning no leſs than a Phthiſis at length; I adviſed that as well for his preſervation, as for the more eaſie cure of the diſtemper, if it ſhould return, he ſhould travel into a hotter Region. Hereupon he did not much delay, but ſails into *France* about the beginning of *November*, and from thence by a ſtraight journey to *Montpelier*, where abiding half a year he was ſick only twice and both times lightly: afterwards returning into *England* quite free from a Cough, praiſe be to God he enjoys his perfect health.

SECT. I. CHAP. VII.

Of Spitting Blood.

HItherto of a Cough and Phthiſis, as well in its beginning as confirmation; which are the moſt common affects of the Lungs, and moſt eſpecially dangerous. Beſides which there are many other diſeaſes of thoſe parts that do occur, which when they are not at all, or not ſeaſonably enough cured, for the moſt part degenerate into a Phthiſis. Theſe paſſions, or at leaſt the chief of them, (as we have before hinted) are ſpitting of blood, an Impoſthume, or Ulcer of the Lungs, a Peripneumony, Empyema, a Pleuriſie, a Tumor of the Lungs, and obſtructions by reaſon of things divers ways concreted, *viz.* ſometimes little Puſtles and Scirrhus's, another while gravel and little ſtones, and ſometimes other preternatural matter; and laſtly hitherto belong an Aſthma and convulſive diſtempers of the Breaſt. Of theſe we ſhall treat in order, and firſt of Spitting blood.

Spitting blood a diſtemper very frequent. The ſpitting of blood out of the Lungs and the ejection thereof by Cough ſometimes leſs and almoſt none, another while more violent, is a diſtemper frequent enough, and truly an admiration it is, that it happens not more frequently. For whereas the veſſels bringing blood are divided into twigs and innumerable ſlips, and thoſe very ſmall; and whereas the blood even fiercely boiling, is violently conveyed through them all, complicated after divers manners and variouſly intorted; we can hardly conceive how the

the circulation thereof being ſo perplexed and intricate, and alſo ſo impetuous, ſhould be performed without ſome impediment and interruption. And truly we conclude it to be very difficult in living bodies, becauſe it hardly ſucceeds by injection in the dead: for as much as liquor ſent through the entrance of the pneumonic Artery, will not readily and eaſily return by the Veins; but ſticking longer in the paſſage, and skipping over the uſual paſſages, variouſly runs out into the little bladders and other canals of the Trachea, and into the interſpaces and other various gaps of the little Lobes.

Three things to be conſidered concerning it.

Concerning an Hæmoptoſis or ſpitting blood we are to conſider, firſt out of what veſſels, and by what diſtemper the blood burſts out; ſecondly in what places moſt frequently laid up; thirdly by what means it is wont either to be ejected or brought upward, that it may be diſcharged by the mouth.

As to the firſt, we are to ſuppoſe by the Law of Circulation, that the blood of it ſelf burſting out, doth altogether proceed from the Arteries: for the Veins, as long as they remain whole, do reduce it towards the Heart, and not at all pour it out; although we deny not that ſometimes they being hurt by a wound, fall, bruiſe, or ſome violent accident, ſo as to be looſned from their unity, do let go the blood out of their cavities. Nevertheleſs the blood moſt commonly cauſing an Hæmoptoe or blood-ſpitting, proceeds from the little mouths of the Arteries being open or torn; and then the fault is wont to be either in the ill temperament of the blood, or ill framing of the veſſels.

Out of what veſſels the blood burſts out.

Of either of theſe there are various kinds and differences, which alſo concur after a diverſe manner to provoke the ſpitting of blood. For the blood being ſometimes more thin and alſo ſharp, it unlocks or corrodes the mouths of the little Arteries; and ſometimes again being more thick and prone to coagulate, when it cannot readily enough be received by the Veins, it is extravaſated. By reaſon of theſe faults in the blood, they who labour with the Scurvy or with a peſtilent Feaver, as alſo thoſe who have drunk ſome ſort of poiſon, do frequently fall into a ſpitting of blood. Neither is this diſtemper leſs wont to ariſe from the fault of the veſſels, in as much as thoſe being too tender or too thin, many times are burſt by a violent motion, as by coughing, hollowing, leaping, or other vehement exerciſes; or for that being too looſe and moiſt, their mouths open, and ſuffer the blood to break out of its circulation: moreover ſometimes for that the Veins being contracted and wrinkled by cold, do not readily paſs away the blood, but the ſame reſtagnating diſtends the little Arteries, and burſts out of their mouths.

By what fault both of the veſſels and of the blood it happens.

As to the Arteries, out of which the blood breaks, cauſing a ſpitting of blood, it concerns much of what ſort they are, and where they are placed; for beſides that there ariſe notable differences of bloody ſpittle, according as the blood breaks out from a ſmaller or a greater veſſel; and if either of them be placed in the top of the Lungs near the Larynx, or in the middle region thereof among the greater branches of the veſſels, or laſtly in the lower region among the orbicular little bladders: moreover we obſerve, that the Arteries which uſe to void blood, are either of the number of them, which ariſing out of the pulmonary Trunk, do every where accompany the branches of the Trachea; or of thoſe which owning their origine to the Aorta, do cover the coat of the Trachea with a thick branching.

what Arteries chiefly and where placed do void blood.

Both the pneumonic and tracheal are in fault.

For it is apparent (as we have declared before) from the mouths of theſe, as alſo of the Glandules, an unctuous humor ſweats out to make the inner ſuperficies of the Trachea ſlippery: moreover in as much as a ſerous humor diſtils abundantly out of the ſame into the cavity of the rough Artery, a Catarrh ariſes. Wherefore we doubt not at all to affirm, that even from the mouths of theſe being open, meer blood ſometimes ſoaking into the Tracheal paſſages, does propagate a bloody ſpittle, though in quantity very ſmall. I have obſerved many, who without a Cough or any indiſpoſition of the Lungs, have once or twice a day voided one or two bloody ſpittles: which as often as it came upon them, the Patients perceived, either in the bottom of the throat, or on the top of the breaſt a kind of diſtillation; whence immediately by the meer contraction of the Tracheal Fibres, with a Snail-like motion, a little of the fluid blood being mixed throughly with flegm, and not at all frothy, is voided: and when ſometimes that diſtemper had laſted for many months, no prejudice enſued from thence, which might bring or threaten a Phthiſis: which would not have come to paſs, if any of the pneumonic Veſſels had been opened.

Spitting blood from the tracheal Arteries.

2. So much concerning Veſſels voiding blood, and of their divers affections. What belongs to the places wherein the extravaſated blood is depoſited, theſe chiefly and almoſt only are the rough Artery, and the inward cavity of the parts thereof. For into

2. In what places the blood is depoſited.

this, as into a Jakes, all the filth or ſuperfluities of all the reſt of the paſſages are derived by the utmoſt endeavours of Nature, as far as is poſſible, to be preſently ſent out of doors. But if the extravaſated blood be thrown into the interſpaces of the little Lobes, or ſoaking out of the outer Membrane, fall into the cavity of the *Thorax*, it doth propagate an Empyema, and frequently an Impoſthume in that place. But for the moſt part the blood ſubject to fall from the pulmonary courſe, produces various kinds of bloody ſpittle; according as it makes its neſt, either upwards within the cavity of the Larynx, or a little beneath about the intermedial paſſages of the Trachea, or laſtly further within the orbicular little bladders. The firſt diſtemper proceeds alone from the mouths of ſome Artery being opened, which covers the trunk of the Trachea; the next ſometimes perhaps from this cauſe, yet more often from the pneumonic Arteries themſelves being open or burſt aſunder, which veſſels as they are greater, pour out often a dreadful quantity of blood; the ſpitting out whereof proves plentiful and violent, in regard that the muſcles of the whole breaſt, together with the fibres of the Trachea are much provoked and greatly contracted. But if the ſpring of bloody ſpittle conſiſts in the lowermoſt little bladders, the blood is thrown out more ſparingly, but with a profound, frequent, and very troubleſom Cough.

Either in the Larynx, or in the middle of the Bronchii, or in the orbicular little bladders.

3. And from hence (which was in the third place purpoſed) the differences of bloody excretion out of the Lungs, and the manifold modes and courſes of bloody ſpittle are made known. For the blood ſoaking into the Larynx, after a ſmall tickling in the throat without coughing or hawking, doth eaſily and almoſt inſenſibly aſcend into the mouth: and if an extravaſation of this kind of blood happens in ſleep, it preſently flows out of the mouth upon wakening, they being ſcarce ſenſible of it; in as much as the moving fibres of the Trachea being contracted while one ſleeps, have then emptied the blood freſh diſtilled into the mouth. But if from a greater veſſel gaping or burſt about the middle of the Lungs, the blood (which is ever frothy) does break out abundantly into the Tracheal paſſages, this by an outragious Cough raiſed thereby is forthwith caſt upwards with violence and in great plenty; inſomuch that the ſick ſeem rather to vomit than cough out blood. And finally, if the blood breaking out of the foldings of the veſſels wherewith the orbicular little bladders are incompaſſed, falls down into thoſe little cells, from thence it is diſcharged by turns in leſſer quantity, and not unleſs by a ſtrong and very frequent Cough.

The procatarctic and evident cauſes thereof.

So much concerning the formal reaſon, the conjunct cauſes and differences of an Hæmoptoe: as to what belongs to the primary and evident cauſes, either of them are manifold and various. In the former number are reckoned, firſt an hereditary indiſpoſition of the Lungs, whenas they have originally been weak and ſoft with a ſtraitneſs of the breaſt. Moreover their ill temper from a Cough, Empyema, or Pleuriſie going before, and eſpecially an obſtruction or ill conformation do very much diſpoſe to ſpitting blood, and ſo much the rather, if in ſuch a habit an acrimony or Dyſcraſie of the blood ſhall accrue from an ill courſe of Diet, unwholeſom Air, or by any other means. The ſuppreſſion of the Menſtrua, the Hæmorrhoids, or blood flowing from the Noſtrils incline moſt to a ſpitting blood. Secondly, among the evident cauſes ought to be reckoned primarily the exceſs either of heat or cold; for when the blood grows above meaſure hot, or the tranſpiration thereof through the Pores of the skin is hindred; thereupon ſwelling after a huge manner, it frequently burſts out of the pneumonic Veſſels. From hence *Hippocrates* long ago obſerved, and as yet it is a vulgar obſervation, That ſpitting blood moſt frequently happens in the winter when the North-wind blows. Neither leſs ſeldom hath the uſe of bathing brought this evil upon many, before the uſe whereof they were healthful enough. Moreover many contract this from drinking of wine and ſtrong waters, from a blow, a fall, hollowing, vomiting, coughing, or any other violent ſtirring of the whole body or of the Lungs. Alſo certain poiſons, and according to *Hoornius* the Lunar beams (the reaſon whereof doth not eaſily appear, neither doth there remain any credit thereto) are reported to provoke this diſtemper.

The Progniſtics of this diſeaſe.

The Prognoſtics of this diſeaſe are enough known to the vulgar, whereas there is not any one of them, who doth not ſuſpect the ſpitting of blood as very dangerous. Nevertheleſs whereas the kinds hereof are various, one is found more or leſs dangerous than another. The blood ſoaking out of the veſſels of the Trachea is often free from any evil: moreover when breaking out from the loweſt and leſſer pulmonar Veſſels, it often admits of Cure; at leaſt it is much ſafer than a plentiful ſpitting of blood happening from the great branches of the Artery being opened into the Trachea. But the prediſpoſition of the Patient makes a great difference in the Prognoſticks of this diſ-

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eaſe: for if blood-ſpitting be provoked by reaſon of a ſolitary evident cauſe, and ſhall happen to a body formerly ſound and well ſet, there appears far greater hope of help, than if the diſtemper ariſing of its own accord ſhall happen to a cachectical, phthiſical, ſcorbutic, or otherwiſe ſickly body. However 'tis a common obſervation, that this diſeaſe is dangerous and always difficult to cure: the reaſon whereof is alſo clearly manifeſt, for as much as the function of the Lungs conſiſting in a perpetual motion, is altogether contrary to the method of healing a wound, whereto primarily eaſe and reſt are required. In like manner this happens to be a greater hindrance to its Cure, in as much as the frame of the Lungs is not a Parenchyma (as was thought) but a texture or very ſubtile web of innumerable veſſels; the unity whereof if once diſſolved, it will be altogether impoſſible for the ends of the disjointed veſſels to meet again together, or the ſpace to be filled up with fleſh or callous, as in other parts. But there is this only to be hoped, that while the ends of the veſſels grow together incongruouſly and always imperforated, the circulation of the blood ceaſing in the part diſtempered, may be ſupplied by another neighbouring part: which indeed rarely ſucceeds without hurt or prejudice of the whole Lungs.

The Cure thereof.

As to what appertains to the Method of healing the Hæmoptoe or ſpitting blood, the curative indications ſhall be chiefly theſe two, *viz.* to ſtay preſently and reſtrain the flux of blood; then ſecondly, to heal the diſſolution of unity without any relicts of a Conſumption in the Lungs.

I. *Indication.*

I. As to the former, theſe two things are chiefly to be procured, *viz.* firſt that blood flow not to the part diſtempered; and ſecondly, that in the mean time the opening of the veſſel may be ſome-how ſhut.

1. *It ſtops the flux of blood.*

1. That the blood may not flow to the part diſtempered, there are many intentions of healing in uſe, *viz.* it will be requiſite to diminiſh the abundance of blood, to reſtrain the boiling thereof, to alter the intemperament, and depreſs its motion or divert it another way: for which purpoſes Phlebotomy, Ligatures, and Frictions are often convenient: alſo Juleps, Decoctions, Emulſions, and ſucculent Expreſſions of Herbs ought to be drunk. Likewiſe moderate Hypnotics, and in the firſt place Diacodiates are exhibited with ſucceſs: for theſe, by reſtraining the motion of the Heart, do force the blood to cool.

2. *It ſhuts the opening of the Veſſels.*

2. That the opening of the veſſel may be ſhut, aſtringent and agglutinating remedies are in the firſt place convenient. The chief of theſe are uſed to be exhibited in the form of a Linctus, ſo that while one ſwallows, certain particles gliding into the rough Artery, may more immediately communicate their power to the part diſeaſed. But the reaſon of this operation ſeems not to be of any great moment; becauſe the efficacy of the Medicines themſelves, chiefly and almoſt only by the conduct of blood reaches to the ſeat of the diſeaſe. Wherefore not only Lohochs, but alſo Decoctions, Powders, and Pills of vulnerary and balſamic Ingredients are preſcribed with ſucceſs. The forms hereof we ſhall annex beneath.

II. *The ſecond preſervatory indication.*

II. The ſecond indication, which is alſo preſervatory, reſpecting the healing of the diſſolution of unity without any remaining hurt of the Lungs, ought to provide againſt two ſorts of evils, *viz.* leſt the ſpitting blood (whereunto the diſtempered are afterwards always prone) begin again; and leſt a Phthiſis ſucceed, which threatens every body ſubject to the Hæmoptoſis. For theſe ends for the prevention of this diſeaſe daily care and conſtant courſe of healing ought to be miniſtred to the blood and Lungs.

1. *It reſpects the blood which is to be kept in a right Craſis.*

1. As to the blood, the maſs thereof ought to be contained ever in a due quantity, and a right temperament, with a mild and equal motion. Hence leſt it ſuperabound, or diſtempered with a Dycraſie enter into turgeſcencies, or lodge its impure feculencies in the breaſt: it is requiſite ſometimes to uſe Phlebotomy and a gentle Purgation. An exact courſe of Diet is always neceſſary. Moreover for the depurating and ſweetning the blood, drinking of Aſſes milk, or of Medicinal waters ſometimes does greatly help. But Decoctions, diſtilled Waters, Juices of Herbs, which carry away the ill temperaments of blood, and derive the Serum and other impurities from the Lungs, and bring them forth either by Sweat or Urine, are to be carefully drunk. Beſides for this purpoſe Iſſues do chiefly conduce.

2. *A due frame of the Lungs to be procured.*

2. Neither ought there to be leſs care of the Lungs themſelves, namely that the whole frame thereof, and chiefly the place affected, be preſerved in due frame and right tone. Hence every violent motion, whereby its unity is more diſſolved, or the reſtitution thereof hindred, ſhould be induſtriouſly declined. Let the party live

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in a clear and open air, but not too fierce, or ſharp; let him abſtain from groſſer foods, from Noon-ſleeps, from plentiful Suppers, and other errors in diet, which induce either repletion or obſtruction upon the *Præcordia*. But let remedies be admitted in daily uſe, which by a peculiar property, or certain ſpecifick vertue are reported to heal the Lungs.

The method of healing requiſite for ſpitting of blood, being ſhadowed after this manner, there yet remains as to all the therapeutic indications, and according to the various intentions of healing which belong to them, for us to ſubjoyn ſome more choice forms of Remedies, whoſe Van thoſe deſervedly lead which meeting with the ſymptom moſt urging, do ſuddenly reſtrain the flux of blood caſt out by coughing or otherwiſe out of the Lungs. In the firſt rank of theſe Medicines thoſe are reckon'd which hinder the blood from flowing to the part affected, and together are impregnate with a certain aſtrictive and agglutinative power whereby the opening of the veſſel may be ſhut; and after the Belly being cleared with a Clyſter, and Phlebotomie (unleſs a weak pulſe and defect of heat withſtand it) made uſe of, there is wont to be given ſomewhat in form of a Julep, Decoction, Emulſion, juicy Expreſſion, Powder, Pills or Lohochs. We will annex certain more elegant and more efficacious Receipts of all of theſe, as likewiſe of Narcoticks, which notwithſtanding ought not every where and indifferently to be uſed, but methodically and ſeaſonably, according to advice of a diſcreet Phyſician, according to the various conſtitution of the patient and condition of the diſeaſe.

The forms of Medicines.

1. Juleps *and* Diſtilled Waters.

Juleps.

Take of Purſlain and Poppy-water of each 6 ounces, Dragons-blood in moſt fine powder half a dram, ſyrup of red Poppies two ounces, ſpirit of Vitriol of Mars ℈ß. *mix them; the doſe* ʒiij. *repeated once in 5 or 6 hours.*

Take of Plantane-water ℔j. *Gum Tragacanth and Arabick powder'd, of each* ʒß. *mingle and diſſolve them; after adding ſyrup of dryed Roſes* ʒj ß. *make a Julep; the Doſe* ʒiij. *or* ʒiiij. *every third or fourth hour.*

Take of the water of Oak-buds, red Roſes, Water-lillies, of each ʒiiij. *of Blood-ſtone finely ground, Bole-Armenick powder'd, of each* ʒß. *ſyrup of Water-lillies* ʒij. *mix them; the doſe* ʒiij. *or* ʒiiij. *three or four times a day.*

Diſtilled Waters.

Take of the Dew or almoſt inſipid Phlegm of Vitriol ℔j. *Syr. of Myrtles* ʒij. *mix them, the doſe* ʒij. *or* ʒiij. *often in the day or in the night.*

Take of Cypreſs-tops M. viij. of the leaves or flowers of Willow M. vj. *the greater Comfry-roots, Water-lillies, of each* ℔ß. *Pomegranate-flowers* M. ij. *All being cut ſmall together, pour on them* ℔ viij. *of new Milk; let it be diſtill'd in common Organs, the doſe* ʒiij. *or iiij, often in a day.*

Take of this diſtill'd Water, and of Plantane-water, of each ℔ß. *Gumm Tragacanth and Arabick of each* ʒij. *diſſolve them; the doſe is* ʒiij. *every third hour.*

The following Mixture is preſcribed by Dr. *Frederick Decker*, to be taken a ſpoonfull at a time in ſpitting blood, and ſeems a very beneficial one.

Take of Plantane-water ʒij. *Cinnamon-water* ʒij. *conf. of Hyacinth* ʒi ß. *diſtill'd Vinegar* ʒß. *of red Coral prepar'd* ʒß. *Balauſtins, Dragons-blood, of each* ℈ß. *Laudanum Opiate gr. iij. Syr. of Myrtles* ʒj. *mingle them.*

A Julep.

Take of Plantane, red Roſe, and Purſlain-water, of each ʒiiij. *of Blood-ſtone and Dragons blood reduced into fine-powder, of each half a dram, Sugar-Candy* ʒ vj. *make a Julep.*

A Solution of common Vitriol, or of Vitriol of Mars made in Spring-water, and applyed with a rag to a wound, wonderfully ſtops bleeding, but is ſcarcely convenient to be given inwardly.

2. Decoctions, Tinctures, *and* Emulſions.

Apozems.

Take the leaves of Blood-wort, Periwincle, Mouſe-ear, Plantane, Wood-ſorrel, both ſorts of Daiſies, of each one handfull, red Roſe leaves half a handfull, Barly half an ounce, Raiſins two ounces, boyl them in three pints of Smith-forge water filtred, (or water wherein hot Iron hath been often quencht) to two pints. To the ſtrain'd liquor add

add two ounces of the ſyrup of the Juice of St. John's-wort, *or of Mouſe-ear, make an Apozeme, doſe from four ounces to ſix, three times in a day.*

Take the leaves of St. John's *Wort, roots and leaves of Tormentil, of the greater Burnet, Meadow-ſweet, of each one handfull, of the ſeeds of Purſlain, Plantane, Sorrel, of each one dram, Conſerve of red Roſes half a pound, Spring-water eight pound, boyl them for 12 hours in* Balneo Mariæ, *to it being ſtrained adde half a ſcruple of the ſpirit of Vitriol of Mars, to be taken as the former.*

Tinctures. *Take of Barly-water with Madder-roots boyled in it a pound and half, infuſe in it being warm a handfull of red Roſe-leaves, adding one ſcruple of ſpirit of Vitriol, after three hours ſtrain it, adding Syrup of the Juice of St.* John's *wort one ounce and half, take three or four ounces, three or four times a day.*

Emulſions. *Take of the decoction of the roots of freſh Nettles a pound and a half, white Poppy and Henbane-ſeeds of each two drams, Melon-ſeeds 6 drams, make an Emulſion, ſweeten it with Sugar penids; the doſe is three ounces, three or four times in a day.*

3. Juices of Herbs and juicy Expreſſions.

Juyces of Herbs. *Take of the Juice of Plantane half a pound, take two or three drams three times a day, in 3 ounces of the diſtilled water preſcribed before; ſweeten it to pleaſe.*

Take of freſh Nettles, Plantane, the ſmaller Daiſies, of each 3 handfulls, bruiſe them, and pour upon them of Purſlain-water 6 drams, make an expreſſion, take it as the former.

4. Powders *and* Pills.

Powders. *Take of the powder of Blood-ſtone, Dragons-blood, ground with Roſe-water on a Marble, Pearles, of each one dram, Bole Armenick, and Earth of* Lemnos, *of each half a dram, Troches of Winter-cherries two drams, make a powder, divide it into twelve parts, one part to be taken three times a day in the former diſtill'd water.*

Take of Henbane, white Poppy-ſeeds, of each 10 drams, ſealed Earth, red Coral, of each 5 drams, Sugar of Roſes three ounces, make a powder, the doſe one dram morning and evening; this compoſition made up with a fit Syrup into a ſoft conſiſtence, was anciently call'd and renowned in Germany, *by the name of* Helidæus *Electuary.*

Pills. *The aforeſaid Powders with the addition of Gum Tragacanth diſſolv'd, or ſome fit ſyrup, may be reduced into Pills or* Lozenges.

The ſpongious excreſcence uſually growing to the fruit of Hipps or Dog-bryar, reduced into powder, half a dram taken twice a day, is a very profitable remedy in ſpitting blood.

Take of Yarrow bruiſed and dryed in the Summer-Sun as much as you pleaſe, reduce it into powder to be kept in a Glaſs; the doſe from half a dram, to a dram twice a day in any convenient liquor.

Julius Cæſar Scaliger's *Powder, or rather that of* Serapion *is mightily commended. Doſe four drams, twice or thrice a day.*

5. Lohochs *and* Electuaries.

Electuaries. *Take conſerve of red Roſes, of Dog-roſe, of each two ounces, powder of white Poppy and Henbane ſeeds, of each two drams, ſpecies Diatragacanth. frig. one dram and half, of Blood-ſtone, Dragons-blood prepared, of each half a dram, Syrup of red Poppyes what will ſuffice to make an Electuary. Take the quantity of a Cheſnut evening and morning, at other times let him lick with a liquoriſh ſtick.*

Lohochs. *Take conſerve of the greater* Comfry *flowers, of Water-lillies, of each an ounce and half, Troches of Winter-cherries, of Diatragacanth. frig. of each a dram and a half, ſyrup of Jujubes what will ſuffice to make a ſoft Electuary, of which lick often.*

Take of the white of an Egge well beaten two drams, Sugar of Roſes one dram, of white Starch three drams, make a Lohoch to be taken often with a ſpoon.

Take of Conſerve of red Roſes 3 *ounces,* Leucatella's *Balſam half an ounce, Troches of Winter-cherries two drams, Syrup of red Poppies what ſuffices to make a ſoft* Lohoch: *the doſe is the quantity of a Cheſnut night and morning.*

II. The

The ſecond Indication. II. The ſecond preſervatory Indication exhibits ſuch remedies, which by containing the blood in its right temper, and the Lungs in their due frame, do provide againſt a relapſe of ſpitting blood, and the following of a Phthiſis. Such things which reſpect the blood, either are mild evacuators by Stool, Urine or Sweat; or are meerly Alteratives. Every of theſe are uſually preſcrib'd either in form of Potion, Powder, Electuary, or Pills: We will here ſhew you the moſt ſelect patterns of the chief of them.

The firſt intention in reſpect of the blood.

A Purge. 1. As to Evacuators, a gentle Purgative is ſometimes appointed after this manner.

Take of the beſt Senna three drams, Caſſia fiſtula bruiſed one ounce, Tamarinds three drams, Coriander-ſeeds a dram and a half, boyl them in Spring-water to 6 ounces, to it ſtrain'd add ſyrup of Chichory with Rhubarb one ounce, clarifie it with the white of an Egge. Or,

Take 4 ounces of Gereons *decoction of Senna, Syrup of Apples purging one ounce, mingle them and make a potion.*

Alteratives. 2. That the good temper of the blood may be preſerved, and the ſuperfluities drained from the Lungs may be continually diſcharged by Sweat and Urine, theſe following Alteratives, or ſome of them are for the moſt part receiv'd in conſtant uſe; which alſo being endued with a healing power, do ſuccour the weak Lungs, or thoſe whoſe Unity is diſſolv'd.

For ordinary drink, let ſimple water, eſpecially in a hot conſtitution, or being colour'd with a little Claret-wine, be drunk. Thoſe with whom this doth not agree, *a Bochet of China, Sarſa, with ſhavings of Ivory, Harts-horn, with white Sanders,* or *ſmall Beer, or ſmall Ale, with the leaves of Harts-tongue, Oak of Jeruſalem,* and the like infuſed, are frequently uſed with good ſucceſs.

Pectoral Decoctions or Hydromels with temperate Vulneraries are taken twice or thrice a day to 6 or 7 ounces.

Decoctions. *Take of freſh Nettles, Chervil, of each one ounce, Harts-tongue, Speedwell, Mouſe-ear, Ground-Ivy, St.* Johns-*wort, of each a hand-full, boyl them in three pints of Spring-water, to two pints, adding Raiſins ſtoned an ounce and half, Liquoriſh two drams, to it ſtrain'd add Syrup Byzantine two ounces, clarifie it with the white of an Egge, make an Apozeme to be taken from 4 ounces to 6, twice or thrice in a day for a month. In a more cold or phlegmatick conſtitution, let the Liquoriſh and Raiſins with the Syrup be omitted, adde at laſt of Hony well clarified two ounces, ſtrain it and keep it for uſe. The Doſe is the ſame.*

The uſe of theſe is ſometimes intermingled with a diſtilled water appropriate for that uſe, which likewiſe is more frequently taken by ſuch who nauſeate and loathe Apozemes.

A diſtilled water. *Take the tops of Cypreſſe, leaves of Ground-Ivy, of each 6 handfulls, of Snails half boyled one pound and half, of all the Sanders bruiſed of each one ounce, being cut and bruiſed infuſe them in 8 pound of freſh Milk, diſtill it in common Organs, the Doſe 3 or 4 ounces with a ſpoonfull of Syrup of Ground-Ivy, to be taken twice in a day.*

The ſecond intention reſpects the Lungs. 2. In reſpect of the Lungs, *viz.* that without obſtruction or opening of the veſſels, the Union of parts, and due conformation of the whole may be preſerved, temperate balſamicks chiefly conduce. To this intent *Leucatello's* Balſam is commonly preſcribed to be taken daily and for a long ſeaſon. Chymiſts and certain Noble women do cry up with great praiſe a balſamick Oyl drawn by diſtillation, called by them *the Mother of Balſam.*

It would be eaſie here to reckon up very many other remedies againſt ſpitting blood, very much celebrated by the ancient as well as by modern Writers; notwithſtanding the harveſt of theſe already gathered together doth at preſent ſeem rich enough. But it remains, that I illuſtrate as well the Theory of this diſeaſe, as the curatory method above delivered, by a Hiſtory or two of ſick Patients.

The firſt Hiſtory. A noble young man, when after a ſcorbutical *Cachexia* he was affected with a Palſie, and for curing this diſeaſe, remedies not only great but improportionate to the blood and ſpirits were experimented by him, *viz.* Salivation and the uſe of Baths,

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he contracted a ſpitting of blood, whoſe fits (of all I ever knew not preſently mortal) were moſt fierce. Preſently on the firſt appearance of this diſeaſe, ſpitting blood followed the Operation of *Hues*'s powder (from which having for ſome time ſuffered a flowing of the Mouth, without his Palſie being cured he was reduced to great weakneſs:) Then being afflicted with a Catarrh, and a Cough very troubleſome, he began to diſcharge a diſcolour'd Spittle, ſometimes ſtained, and ſometimes ſprinkled with blood; but this diſeaſe being mild from the beginning, did ſuddenly vaniſh away by the uſe of remedies, and after going into the Countrey, and ſucking in a more pure air, he became better, and after a while ſeeming healthful enough in his breaſt, he went to the Bath, for the benefit of his Palſie; where daily bathing for a fortnight in thoſe hot waters, he again contracted a Cough, and a little after an horrid Hæmoptoe or a ſpitting of blood, ſo that in the ſpace of 24 hours, coughing often and plentifully, he poured out blood in a vaſt quantity.

I firſt viſiting him in this condition, proviſion being made for the whole, I preſcribed preſently Phlebotomy for revulſions ſake: notwithſtanding after this adminiſtration (both then and ever after) he either repeated the bloody ſpittle, or grew worſe. Moreover, I exhibited Juleps, Lohochs, Decoctions, and alſo Hypnoticks, which helping little or nothing, ligatures made about his arms and thighs, did firſt of all reſtrain the tyranny of this diſeaſe: And when afterwards the Evil broke out again, I perſwaded him at length, (his drink of Beer being left) that he ſhould conſtantly drink the decoction of China and Sarſa with the Pectorals. By the continual uſe hereof, obſerving moreover an exact courſe of diet, and altogether abſtaining from wine, more hot aliments, and Salt, and Sugar, for above two years he was well in health.

But afterwards when by being crouded in a Court of Judicature, he grew mighty hot, he relapſed back again into a terrible ſpitting of blood. A Phyſitian being ſent for, he was preſently let blood in the arm, whence his ſpitting of blood became more ſharp; and when afterwards letting blood was repeated the ſecond and third day, and the evil grew worſe every time, at length Ligatures (as at firſt) being adminiſtred, and the pectoral drink and a Linctus being often taken, the diſeaſe preſently remitted, and in a ſhort ſpace wholly ceaſed; notwithſtanding he continued the uſe of his pectoral decoction and ſlender diet, *viz.* no fleſh-meat, for a fortnight; and from thence he obtained truce from his enemy for three years; and when afterwards at any time the blood ſwelling by drinking of wine, or taking more dainty food, began to break out from the Lungs, preſently by ligatures, and the uſe of the Decoction and Lohoch, and a thin diet, its aſſault was wont to be repulſed. But he did not ſo ſafely eſcape, but that it was neceſſary for him for the moſt part to keep perpetual watch againſt that enemy always lurking: for not long ſince by reaſon of the intemperature of the year, he contracted a troubleſom Catarrh, with a Cough, a plentifull ſpittle, and ſometimes bloody, and then the former medicines effected leſs; wherefore, he betook himſelf by his own advice to new things, and in the firſt place took evening and morning a ſpoonfull of Syrup of Ground-Ivy, and thereby enſued a notable help: but when that Syrup became quickly loathſome by reaſon of the Sugar, he took the powder of that herb well prepared to half a dram, or one dram twice a day in a ſpoonfull of ſome liquor; by the long uſe of which Medicine he was much better as to his Catarrh and Cough. But when the ſpitting of blood now and then broke out, though in little quantity, he chang'd again his Medicine, and took twice in a day the powder of the tops, and chiefly of the hairy excreſcences of Cynorrhodon or Dog-bryer: which only medicine a certain Phyſician renowned formerly for the cure of ſpitting blood, uſed with great ſucceſs. Neither did our Patient receive a leſs happy effect from that medicine, for preſently after he eſcaped altogether free from a Cough, a Catarrh and bloody Spittle, and ſo remained for a long while: untill at length believing this diſeaſe of the Breaſt to be wholly ſubdued, and therefore ſlighting it, he aſſumed weapons againſt the other more ancient enemy the Palſie. Wherefore, while his Hæmoptoſis or Spitting of Blood was neglected, he daily took a large doſe of hot Medicines to conquer that other diſtemper, *viz.* magiſtral waters diſtilled with Wine, ſpirit of Harts-horn, of Sal Armoniack, and Aromatick Powders and Confections; Beſides, whilſt he indulg'd himſelf in a more plentiful diet, with a moderate drinking of Ale and Wine, the roaring Lion that at firſt ſeem'd to ſleep, was again ſtirr'd up, *viz.* he had not long continued in that antiparalytical Method, but the Spitting of blood returned with its greateſt fierceneſs, ſo that in the ſpace of a day and a night he

coughed out above three pints of ſpumous blood. But afterwards a Phyſician being ſent for who preſently preſcribed Phlebotomy, the ſpitting of blood began to ceaſe upon bleeding (as formerly it was always wont to do) but then fell into ſharp fits again: which however by the uſe of Ligatures, and a Lohoch and pectoral Decoction daily taken, was preſently aſſwaged, and a while after wholly ceaſed. And when afterwards he uſed the pectoral Decoction three months, and a very ſlender Diet, *viz.* without any fleſh, only of Herbs, Barley, &c. and Milk-meats, in a ſhort time he recovered his former health, and now lives in that ſtate, ſo triumphing over that cruel diſeaſe, that many Hæmoptotic perſons conſult him as their Oracle, and for a Cure do propound a method of this kind of living to be followed before the Phyſicians advice.

The reaſon of the caſe. What is moſt wonderful in this caſe is, that after ſo many breaches ſo often happening in the Lungs, this famous Perſon was not in the intervals affected with a Cough, neither fell afterwards into a Conſumption; whereas moſt after any of the ſmalleſt veſſels being open in the *Præcordia*, for ſome time after labour with a Cough with plentiful and thick ſpittle, and at length frequently become conſumptive. And that it happened otherwiſe to our Patient, I chiefly attribute to the balſamic conſtitution of his blood, *viz.* in the maſs whereof the ſerous recrements are either leſs collected, or ſo ſtrictly mingled, that they cannot be eaſily ſeparated thence; wherefore after the veſſels were broken, or their unity diſſolved, a plentiful Ichor or ſharp humor (being wont to generate a Cough and ſpittle) did not ſweat out as in many others. Moreover what he himſelf obſerved, contrary to many others, that his ſpitting blood happened never in winter, but in Summer, came alſo ſo to paſs by the ſame reaſon: becauſe when the blood did leſs abound with vaporous recrements, the opening or obſtruction of the Pores were neither an advantage nor prejudice to it; nevertheleſs the blood growing hotter than it ought to be, ſeeing it exhaled not, there was a neceſſity it ſhould break out of the veſſels; and when again diminiſhed in quantity, ſending away little or no ſerous Ichor out of the orifices of the veſſels, the ſpitting of blood ceaſed without a remaining Cough. The ſame reaſon holds of many that ſpit blood, wherefore ſome are found much inclinable, others not prone to a Conſumption. This Gentleman ever found the uſe of the pectoral Decoction advantageous to him: wherefore when he often varied other Medicines he always retained the ſame Decoction: moreover he hath commended it to many others ſpitting blood with ſucceſs. The form of the Preſcription was this.

A Drink. *Take of all the Sanders of each ſix drams, infuſe them for twelve hours in ſeven pints of Spring-water, then boil them to a conſumption of a third part, after add leaves of Colts-foot, Maidenhair, Mouſe-ear, Speedwel, flowers of St. Johns-wort, each two handfuls; ſweet Fennel-ſeeds ſix drams, Liquoriſh half an ounce, Raiſins ſtoned half a pound: boil them to four pints, afterward ſtrain it, and keep it for ordinary drink.*

Moreover the ſpitting blood threatning and preſſing upon him he took thrice or oftener a day the quantity of a Nutmeg of the following Electuary, drinking after it ſeven ſpoonfuls of a Julep.

The Electuary. *Take conſerve of red Roſes three ounces, conſerve of Hips, Comfry, each an ounce and half; Dragons blood a dram, ſpecies of Hyacinth two ſcruples, red Coral a dram, with a ſufficient quantity of ſyrup of red Poppies, mix them and make a ſoft Electuary: let him take hereof evening and morning a dram and half, drinking after a draught of the following Julep. At other times let him lick it with a Liquoriſh-ſtick.*

The Julep. *Take Plantane and Spawn-Frog water, each ſix drams; ſyrup of Coral, dried Roſes, each an ounce; Dragons blood two ſcruples: mix them, and make a Julep.*

Among the examples of them that ſpit blood the caſe of that Reverend perſon Dr. *Berwick* S. T. P. and lately Dean of St. *Pauls* Church ought not to be omitted, which ſome while ſince I learned partly from the Patient himſelf, and partly was communicated to me from his Brother that moſt skilful Phyſician Dr. *Berwick* my moſt dear Friend.

The ſecond Hiſtory. That moſt renowned Divine fifteen years before he died laboured with a moſt obſtinate Cough, and ſometimes with a bloody and ſalt ſpittle, with a grievous breath ſtinking like Hell; by which being made lean by a pining away of the body, he wanted but little of being almoſt extinguiſhed by a Conſumption. As often as his ſpitting blood intermitted, the rankneſs of breath and ſpittle ceaſed alſo; afterwards the return hereof declared conſtantly that other affect to be preſently attendant. In this langui-

languishing condition, when this Renowned man was discovered to favour the Kings Party at that time oppressed with a grievous Tyranny, and being cast into a strait Prison, did drink meer water instead of ordinary drink, he recovered his health beyond the hope and expectation of all persons, and so remained indifferently healthful for above ten years space. Nevertheless afterwards, I know not by what occasion, unless by the hardship of a cold winter, not only the aforesaid evils, *viz.* a Cough with bloody and salt stinking spittle did become fierce upon him, but also over and above, a debility of stomach, want of appetite, and a nightly Feaver did accrue. But not long after these Symptoms a little remitting, fair weather again seemed to shine out; until on a certain day, the air being suddenly changed into an intense cold, towards night he was assaulted with great straitness of breast and difficult breathing, with a quick and weak pulse, and fainting of all his spirits, as if he had been expiring. Nevertheless from this danger he suddenly escaped by the interposition of a Crisis, *viz.* by a plentiful spitting of blood, and after by a breathing Sweat: but from that time his spittle remitted much of the usual stench, and something of its saltness; and when in a short time afterwards the last and most painful invasion of spitting blood threatned him, that usual presage from stench of breath was wanting; but the subsequent spitting of blood being very plentiful, did so debilitate his strength, that from that time declining sensibly, he expired within a month: and when a little before his decease, by reason of a sharp pain in his side, a Vein was breathed, his blood seemed to fail so, that almost none streamed out. Moreover in his body dissected after death very little quantity of blood was found: nor could they find any footsteps of the other most notable Symptoms, *viz.* spitting of blood and of the stinking breath and spittle; for there was no collection of any filth or stinking and putrid matter, nor any cavity in the Lungs made by an Ulcer or Wound; but only one lobe of this bowel, or rather the whole left side was so hardned from a scirrhous Tumor, that the blood could not easily or but very little pass through the frame being so obstructed, and as it were stony: wherefore it is no marvel, if the blood that should have passed most swiftly through the Lungs, did now and then burst out in some place from the vessels, which were joined together, or suffered not a circulation by reason of the Schirrosity.

The reasons of the case.

Notwithstanding here a greater difficulty ariseth, *viz.* whereas his Lungs were found altogether free from any Ulcer or notable wound, whence that most dire stench of spittle and breath, always a forerunner and companion of the bloody spittle (the last invasion of this disease only excepted) proceeded. We have in another place given remarks upon all these things, as that Ulcers of the Lungs and the purulent spittle of consumptive persons seldom or never stink, but the matter cast out of an Imposthume of the Lungs doth frequently stink: but that in the sick Doctor the Lungs being free from either affect, breathed out so horrible a breath, the reason will best of all appear, if we inquire of the manner and cause of a stench in general. For we observe this to be excited when the impure Sulphur is dissolved either by a lixivial, or an acid Salt, and is precipitated by the other. Let common Sulphur, or Sulphur of Antimony be dissolved by Oil of Tartar or Stygian water; afterwards if you pour on this solution a dissolution of fixed Salt, and upon that, Vinegar, a most hideous stench will arise. In like manner we may conceive in the case proposed, that the sulphureous particles of the blood being very impure, were corroded by the fixt Salt, with which its juice abounded very much; afterwards when the acid humor, having endured a flux, reflows from the nervous parts into the mass of blood, it precipitates the dissolved Sulphur, and so causes that stench to be exhaled from the Lungs, and whilst it forces the blood into a turgency, a little after it compels to a spitting of blood. I have known some endued with a breast firm enough, and free from all Coughs and consumptive disposition, who have for the most part breathed out a most hideous stench: which could proceed from no other cause, besides what even now we have observed. The impure blood abounding with Sulphur dissolved with Salts, if perhaps while it is rarified within the Lungs, and loosned in its frame, it meets with an acid humor, it will exhale in breathing putrid and horrid effluvia's. It happens by the like reason of the blood otherwise disposed, that as the breath of some persons is very stinking, so of others very sweet. And indeed the breath or air reciprocated through Respiration, for that it carries out with it the effluvia's of blood highly rarified within the *Præcordia*, one while disperses a grateful vapor, another while a most unpleasant.

SECT. I. CHAP. VIII.

Of a Peripneumony, or Inflammation of the Lungs.

The deſcription of a Peripneumony.

A Peripneumony is uſually defined to be, an inflammation of the Lungs with an acute Feaver, a Cough, and difficult breathing. They who labour with this diſtemper are greatly ſenſible of a notable inflammation in their breaſt with a ſwelling of the Lungs, and ſometimes a pricking pain, they draw a painful and ſhort breath, or, as *Hippocrates* affirms, a deep breath; the Feaver preſſes with great thirſt, watching, and painful Cough; whereto alſo bloody ſpittle, or ſtreakt with blood, ſucceeds. By which Symptoms it clearly appears, that this diſeaſe ariſes, in as much as the blood boiling feaveriſhly, doth not eaſily paſs through the leſſer pneumonic Veſſels; but ſticking in their paſſages, begets firſt an obſtruction, afterwards being more heaped and extravaſated, propagates a Phlegmon or inflammation with heat, a Cough, and diſcoloured ſpittle. Moreover in as much as the blood ſo accumulated and ſtagnating, puffs up theſe paſſages of the Lungs, and compreſſes them, a difficulty of breathing is cauſed; and in as much as it pulls or diſtends the nervous Fibres, a pain frequently ariſes.

After what manner a Phlegmon is bred in the Lungs.

But if it be asked, how a Phlegmon ſhould grow together in the frame of a Lung meerly bladdery and excarnous; and after what manner it is diſtinguiſhed from that diſtemper which is wont to be ſtirred up in muſculous fleſh, or the ſubſtance of a bowel? We muſt anſwer, although the above-mentioned parts vary as to the texture, notwithſtanding the reaſon of the affect is altogether the ſame in each of them. For the ſmall ſanguiferous veſſels do every where alike embrace, bind, and variouſly gird about both all the Tracheal paſſages in the Lungs, and alſo the fleſhy fibres in the Muſcles, and laſtly the little fibres and nervous threds, with the thickeſt foldings like cluſters, of the Parenchyma. But that which produces a Phlegmon is the blood it ſelf, which, while it grows very hot, and is hindred in its paſſage, every where, and eſpecially in the Lungs, whoſe veſſels branch into very ſmall foldings, doth firſt beget an obſtruction, and then an inflammation.

The conjunct cauſe of a Peripneumony conſiſts in two things.
1. That the blood boils.
2. That it ſticks in the paſſages.
Sometimes this diſpoſition, ſometimes that is firſt.

Wherefore the formal reaſon and conjunct cauſe of a Peripneumony conſiſts in theſe two things, *viz.* that the blood boils feaveriſhly, and ſticking alſo within the more narrow paſſages of the Lungs, engenders there an obſtruction cauſing inflammation. Unleſs theſe two things concur, there is an exemption from this diſeaſe; for in many other Feavers, eſpecially in a burning Ague, though the blood, moſt intenſly heated and inflaming all the *Præcordia*, as alſo in the longing of women, the Green-ſickneſs and the Dropſie of the breaſt, is very clammy, yet though ſticking very much in the paſſages of the Lungs, it does not ſtir up a Peripneumony: to produce which both diſtempers muſt concur and join their ſtrength. Nevertheleſs when there is an indiſpoſition of both theſe, one while this, another while that, is firſt in act, and after a ſort one is the cauſe, or at leaſt the occaſion of the other. For ſometimes the blood irritated into a Feaver cauſes an obſtruction of the Lungs; and the blood alſo ſometimes finding a remora in the Lungs, receives a feaveriſh boiling from its proper obſtruction. Notwithſtanding, for the conſtituting the procatarctic cauſe of this diſeaſe, the blood ought to be fitted as well for the boiling, as for the obſtructing the veſſels of the Lungs.

What that is Phlebotomy diſcovers.

Though it will not be eaſie to ſhew what this diſpoſition of the bloody liquor is inclining to a Peripneumony, yet the reaſon thereof doth ſomething appear by Phlebotomy, always made uſe of in this diſeaſe with the beſt ſucceſs. For the blood being drawn from any labouring with this diſeaſe, as alſo from thoſe in a Pleuriſie, after it grows cold, in its ſuperficies inſtead of a Scarlet cream, it hath a little film ſomewhat white or otherwiſe diſcoloured growing on it, which alſo is very tough and viſcous: whence we may conjecture, that the maſs of blood being too ſtrait in its frame, whilſt that in the circulation it doth not diſcharge its recrements, grows too thick, and as it were clammy, and for that cauſe becomes too prone as well to boil as to ſtick within the narrow paſſages, and eſpecially of the Lungs.

What affection of the blood produces it.

But if farther inquiſition be made, from whence this diſpoſition of blood proceeds, by which it becomes clammy and viſcous like ropy wine; the general reaſon hereof is this, *viz.* that the more thick parts of blood are not made thin enough by the more ſubtile; ſo that all of them being equally mixed and mutually incorporated, at length the

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good humors ſeparate themſelves into their appropriate functions, and the ſuperfluous are perpetually diſcharged by their proper Emunctories. But on the other ſide in as much as the ſulphureous particles of the blood being combined together with the ſaline and earthy too much exalted, enſnare and entangle all the reſt; for that cauſe its liquor containing within it ſelf all its recrements and impurities, grows clammy as glue, and in that regard contracts an inflammable diſpoſition.

For it is obvious to every perſon, that the blood that grows clammy in this manner, is rendred prone to obſtruct the narrow paſſages of the veſſels (which ſurely are very ſmall in the Lungs); moreover for the ſame reaſon they are diſpoſed to become feaveriſh: *viz.* becauſe retaining obſtinately within its own boſom all the feculencies and recrements, from the ſame preſently gathered into a heap, it is conſtrained into a great turgeſcence or ſwelling, whereby of neceſſity an inflaming obſtruction of the Lungs takes either its origine or augmentation.

The fault of the Lungs produces it.

Moreover as to the procatarctic cauſe of this diſeaſe, very frequently the faultineſs of the Lungs is joined herewith, and determines that general intemperament of blood to affect this part in ſuch a ſort. For as the clammy blood grows hot, the more ſtrong and ſound *Præcordia* do frequently diſcharge the deſigned miſchief from themſelves, and the taint being fixed to the Pleura, or about the habit of the body, a Pleuriſie or Rheumatiſm is rather cauſed than a Peripneumony. Nevertheleſs the tender Lungs being obnoxious to a Cough, or formerly prejudiced in their frame either by ſpitting blood, or other diſtempers of the breaſt, from the blood boiling up (while it is too much bound and clammy in its own conſiſtence) they eaſily engender an obſtructing Phlegmon.

The evident cauſes of a Peripneumony.

Hitherto of the conjunct and procatarctic cauſes of a Peripneumony: as for what regards the evident cauſes, whatſoever ſuddenly perverts the temperament of the blood, or reſtrains its free tranſpiration ought to be referred hither, as chiefly are exceſſes of heat and cold, or the inordinate drinking of Wine or ſtrong Waters, any vehement exerciſe, and the drinking of ſome waters, and thoſe eſpecially icy. Beſides, ſometimes a malignant diſtemperature of Air doth engender this diſeaſe in many, and makes it Epidemical.

It often ſucceeds or follows after a Pleuriſie.

Authors in Phyſick do every where obſerve (and it is alſo a vulgar obſervation) a Peripneumony frequently ſucceeds or comes upon a Pleuriſie; but nothing is more uſual than in a Pleuriſie a bloody and thick ſpittle, and as it were purulent to be voided. Hence a great diſquiſition ariſes, by what paſſage or ways the matter by ſpittle caſt out, can be conveyed from the Pleura to the Tracheal paſſages. Some think, that this being fallen into the cavity of *Thorax*, is ſucked into the Lungs as with a Sponge; and others ſuppoſe, that it is transferred thither by the Membranes adhering thereto, by which the Lungs often ſtick unto the Pleura. But truly either way ſeems improbable, if not impoſſible. For firſt, that the Lungs do not ſuck in the contents of the hollowneſs of the Cheſt is manifeſt from hence, becauſe in a Dropſie or wound of the breaſt, when they happen, the Lungs being unhurt, neither water nor blood is at all diſcharged by coughing; though frequently great plenty of this or that humor be there, which preſently flows out of its own accord from the *Thorax*, inciſion being made. But that ſometimes the Membranes growing from the Lungs, knit themſelves to the Pleura, is clearly manifeſt by Anatomical obſervation; yea and by this way of return I have ſometimes known the purulent matter tranſlated into the ſide, and there by an Iſſue, made by Art or Nature, to have been evacuated with a heathful Criſis: nevertheleſs ſuch Membranes of the Lungs joined to the Pleura do ſeldom pre-exiſt, and in a Pleuriſie, which is a very acute diſeaſe, they cannot, like a Muſhroom, be the iſſue of one or two days: moreover, though ſometimes thoſe obſcure paſſages may be ready at hand, which perhaps by ſome admirable inſtinct of Nature diſcharge ſomething out of the Lungs towards the precincts of the *Thorax*; yet it ſeems againſt the Oeconomy of Nature, that they can derive any corruption outwardly engendered to this moſt noble part within, which ſurely is the fountain both of life and heat.

The reaſon of this is inquired into.

As to this, if it may be lawful to propound our Judgment, I am induced to think that a Peripneumony and Pleuriſie are one while ſingular and ſeparate affects, and another while bred together and coexiſting from the firſt, and another while are by courſe one after another or ſuccedaneous. For the procuring cauſe being ſtirred up into act, ſo that the blood growing clammy, and boiling together, obſtructs in ſome places the leſſer veſſels: the neſt of the diſeaſe ſometimes is faſtned on the Pleura, or ſeparately in the Lungs, ſometimes in each of them together, and ſometimes firſt in one, and then in t'other: but for the moſt part, the Pleura being firſt healed, preſently the

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ſame morbific cauſe invades alſo the pneumonic Veſſels. Moreover we have known a various ſhifting of this affect; *viz.* that it has firſt troubled the right or left ſide, preſently that being deſerted, to have occupied the Lungs, and afterwards both being deſerted, to affect the Brain, and frequently to transfer its ſeat from thence into the above-mentioned places. But for the reaſon aforeſaid a Peripneumony not only ſucceeds a Pleuriſie, but frequently a Squinancy, and ſometimes other diſtempers: for while the blood growing clammy, and boiling together, continues a Feaver in the whole, it transfers the obſtruction cauſing a Phlegmon variouſly hither and thither. And from hence the ſolution of that obſervation is clearly manifeſt, which has ſo much puzled Interpreters, *viz.* that a Palſie or dead Palſie of one ſide doth ſometimes ſucceed a Peripneumony, becauſe the blood that being clammy, had lately obſtructed the pneumonic Veſſels, afterwards ſtuffing certain foldings of the veſſels of the Carotides, prohibits the engendring of animal ſpirits in this or that part of the head, and ſo reſtrains their influence into the reſpective nervous parts. From what hath been ſaid, the chief differences of a Peripneumony are made plain, namely that it is either a ſimple diſtemper, or joined together with a Pleuriſie, Squinancy, or ſome other, and then it is either primary or ſecondary. Moreover it is uſually diſtinguiſhed as to the Feaver and ſtate of breathing: to wit, according as this is more or leſs prejudiced, and as it ſhall be more intenſe or remiſs, this diſeaſe alſo is denominated either more or leſs acute.

The differences of this diſeaſe.

Prognoſtics. As to the Prognoſtics of this diſeaſe, common experience doth atteſt, that it is a very dangerous diſeaſe, becauſe many Patients either die of it, or very difficultly recover health. No leſs may we conclude this from the reaſon or Etiology of it; for a wound with much extravaſation of blood, or a ſtagnation cauſed in the Lungs, is moſt difficultly cured, and the affected place is never reſtored unto its former conformation. The prognoſtic ſigns, which are of greateſt note, are taken from the appearance of Symptoms and nature of things thrown out, and the ſtate of ſtrength.

1. *From the appearance of Symptoms.* 1. A Peripneumony coming upon a Pleuriſie or Quinzy, for the moſt part is worſe than ariſing of it ſelf, or ſucceeding either of them: but if upon this diſeaſe, after what manner ſoever begun, an acute Feaver follows with great thirſt, watchings, and not breathing unleſs ſet upright, it is ill; and yet much worſe, if upon it a Delirium, a Frenzy, convulſive motions, or a Palſie on one ſide enſue. Moreover the Patient is not in leſs danger, if he be very purſie, if troubled with vomiting, or frequent ſwounding away, a weak Pulſe, and a cold Sweat. For while theſe Symptoms are inſtant upon him, the obſtruction of the blood in the Lungs is not removed, nothing is digeſted or ejected by ſpittle; but the circulation of the blood being more and more hindred, and its kindling by breathing ſtopt, the animal ſpirits are throughly diſordered, and at length faint, until together with a proſtration of the whole ſtrength the vital flame is extinguiſhed.

2. *From what is excreted.* 2. As to Prognoſtics from things excerned, we obſerve a Peripneumony to be dangerous, wherein nothing is thrown out by ſpittle; next to this, when the ſpittle is thin and crude, mixed with blood; it is far better when the ſpitting is yellow and thick, ſtreaked with a little blood. The Urine being yellow from the beginning, and of a good conſiſtency, with a cloud in the midſt, ſhews that almoſt all the recrements of the blood are lodged in the place affected; when from that ſtate it is changed into a thick and turbid Urine, it ſhews the morbific matter to be ſwallowed up again from that part into the blood; but if ſuch kind of Urine be ſuddenly changed into a thin one, then a Delirium or death it ſelf is impendent. Much Sweat and plenty of Urine, a Diarrhœa, bleeding at Noſe, flowing of the Menſtrua's, or the Hæmorrhoids do frequently promiſe good in this diſtemper, yea any of theſe Evacuations happening ſeaſonably doth frequently diſcharge the diſeaſe.

3. *From the ſtate of ſtrength.* 3. The condition of ſtrength is ever of great moment in forming a due Prognoſtic in this diſeaſe: for oftentimes when horrid Symptoms, as an intenſe Feaver, a Breathing very painful, with a Cough, watchings, and other ominous ſigns, ſhall be preſſing, if the Pulſe be as yet ſtrong, and the animal ſpirits perſiſt in their vigor, there is better hope of the Patient, than if theſe things being more quiet, there were a weak Pulſe, and the Spirits ſhould become drowſie and oppreſſed.

The Cure hath two chief indications. The firſt indication about the curatory Method in a Peripneumony is, that the blood being impacted in the pneumonic Veſſels, and cauſing a phlegmonous obſtruction, may be from thence diſcuſſed and reſtored to its priſtine circulation. Which if not to be procured, the ſecond indication will be, that that matter be duly digeſted or brought

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to ſuppuration, and with all expedition voided by ſpittle.

While the former indication prevails, the intentions of healing will be theſe enſuing. Firſt, that the more plentiful afflux of blood to the part affected be prevented, or prohibited by ſome means. Secondly, we muſt endeavour, that the matter ſtagnated or extravaſated in the Lungs, be ſwallowed again by the Veins into the reſt of the maſs, and cauſed to circulate. Which that it may be the better procured, thirdly, the blood ought to be freed from its clammy viſcouſneſs, whereby its fluidity is impeded. Fourthly, that we apply to the Symptoms moſt urgent, *viz.* a Feaver, Cough, Watchings, and difficult Breathing, fit Remedies. But if notwithſtanding all theſe another indication ſhall come into uſe, it will be requiſite to preſcribe maturating and expectorating Medicines vulgarly ſo called, together with theſe. *The firſt indication ſuggeſts four intentions of curing.*

1. That we may ſatisfie the firſt and ſecond intention together, Phlebotomy is for the moſt part requiſite in every Peripneumony, yea ſometimes it ought to be more frequently repeated; for the veſſels being emptied of blood do not only withdraw the nouriſhment of the diſeaſe, but do alſo ſup up the matter impacted in the place affected. Wherefore if ſtrength remain, and the Pulſe be ſtrong enough, a more free breathing of a Vein is convenient at the very beginning; but otherwiſe let it be uſed in a little quantity, which however may be repeated as occaſion offers it ſelf. We intimated above, that blood drawn in a Peripneumony and alſo in a Pleuriſie, after it is cold, contains in its ſuperficies a ſmall viſcous and diſcoloured film: moreover we may obſerve one while the blood entirely, another while only a portion thereof is ſubject to this change. For when the blood is received into three or four diſhes, ſometimes in all, but oftener in the ſecond and third diſh it is apparently bad, and in the firſt and laſt laudable enough: wherefore they commonly give it in precept, that blood is always ſo long to be emitted, till that which is ſo depraved begins to come forth; and if ſtrength remain, the bleeding ſhould continue till the good blood flows out again. Truly as common experience doth approve of this practice, even ſo doth reaſon it ſelf; for in this diſeaſe, becauſe the whole maſs of blood doth not preſently acquire that clammineſs, the depraved portions are chiefly accumulated about the place of obſtruction, and adhere on every ſide in the leſſer veſſels. Wherefore the blood firſt iſſuing by Phlebotomy is often void of any fault; afterwards the veſſels being emptied receive the other morbific matter at firſt ſtagnated, and reſtore it to its circulation; and when the portions thereof being placed near, are carried as it were in a joint troop, they flow out together at the orifice of the opened Vein, and after that entire maſs of bad blood hath flowed out, the reſidue being more pure doth ſucceed. Wherefore in this caſe ever let inciſion be made with a large orifice, and let the blood be drawn out not only with a more plentiful ſpouting, but alſo with a continued: for otherwiſe if in the midſt of Phlebotomy, the bad blood iſſuing out, the orifice (as the manner of ſome is, leſt the ſpirits ſhould faint) be cloſed with the finger, when again it is opened, the blood pure enough will iſſue next, but the bad ſliding by, if there be any remaining, will not return preſently to that orifice. Beſides Phlebotomy many other remedies, *viz.* whatſoever do repreſs the turgency of blood, and empty the paſſages thereof, whereby the morbific matter may be ſuckt up, are here to be uſed. Wherefore a very thin diet is preſcribed for the moſt part meerly of Barley and Oats: and if Cathartics are altogether prohibited, becauſe they diſquiet the blood, and hurry it more impetuouſly into the part affected; notwithſtanding Clyſters which gently looſen the Belly, and draw the recrements of the blood towards the Belly, ought to be daily uſed. Moreover Juleps and temperating Apozemes which bridle the fervor of the blood, and draw out the ſuperfluous ſeroſities thereof, and which alſo do gently open the paſſages of the Breaſt, are taken with ſucceſs. *1. The firſt intention that the afflux of blood may be cut off. 2. That the extravaſated be reduced to circulation.* *Rules concerning Phlebotomy.*

3. The third intention of healing, which reſpects the withdrawing of the clammineſs or obſtructing viſcoſity of the blood, is altogether to be performed by remedies which unlooſe the frame thereof being too much bound, and diſſolve the coupling together of its ſalts. And truly the remedies of this kind, which in this reſpect reaſon and analogy would dictate, are now received into uſe by long experience. For Powders of Shell-fiſh, the Tooth of a Boar, and the Jaws of a Pike, and other things endued with an Alkali Salt, alſo Sal Prunellæ, for the moſt part are preſcribed by all Practitioners, as well modern as ancient. I have more frequently known the Spirit of Salt Armoniac and of Harts-horn to have yielded notable relief in this diſeaſe: and for the ſame reaſon it is, (*viz.* becauſe the volatile Salt is uſeful) that the infuſion of Horſe-dung, though a common remedy, affords oftentimes ſingular help. *The third intention of healing is that the clammineſs or viſcoſity of the blood may be taken away.*

4. As

4. That the most urging Symptoms may be helpt.

4. As to the Symptoms and their Cure, very many remedies appropriated to these fall in together with the former; for against the Feaver the same Juleps and Apozems which appease the heat of blood, and withal recreate the animal spirits are of most common use: to which besides in respect of the Cough and difficult breathing, temperate pectoral Remedies are added. The great difficulty is what ought to be exhibited against want of sleep, when it shall grievously oppress; for Opiates, because they do further prejudice the breathing, which in this disease is already hindred, are scarce safely administred, nay sometimes become mortal. Wherefore Laudanum and the strong Preparations of Opium are to be shun'd in a Peripneumony worse than a Dog or a Snake; nevertheless Anodynes sometimes, and mild Hypnotics, as water and Syrup of red Poppies, are not only allowed, but accounted specific remedies in this disease and in a Pleurisie: but sometimes it will be expedient to use Diacodiates as long as strength endures, and as long as the Pulse is strong and good enough. For the pain of the breast, if at any time it be troublesom, it is expedient sometimes to apply Liniments, Fomentations, and Cataplasms.

The second indication respects the maturation and expectoration of the morbific matter.

The second curative indication, whose intentions are to digest the matter impacted in the Lungs (if it cannot be discussed or suckt up) and to throw it out by spittle, requires ordinary maturating and expectorating Medicines, both which notwithstanding ought to be temperate, that is to say, such as asswage thirst, and appease the feaverish heat rather than exasperate it. We have above recited in the Chapter of a Cough, the kinds of these sorts of Remedies properly called Pectorals; the more select Receipts, and chiefly accommodated to this affect, shall be annexed here beneath.

The Forms of Remedies.

1, 2. The Medicines conducing to the first and second intention are prescribed according to the following Forms.

Julept.

Take the water of Carduus Mariæ ten ounces, red Poppies three ounces, Syrup of the same an ounce, Pearls prepared a dram, make a Julep: the dose six spoonfuls every fourth hour.

Take water of black Cherries, Carduus benedictus, Balm, each four ounces; powder of a Boars tooth a dram, Syrup of Violets ten drams: make it into a Julep to be taken after the same manner.

Apozemes.

Take Graß roots three ounces, shavings of Ivory and Harts-horn each three drams, Raisins stoned an ounce and half, Liquorish two drams, boil them in Spring water from three pints to two, to the strained liquor add Syrup of Violets an ounce, Sal prunella a dram: make an Apozem to be taken thrice a day about three or four ounces.

Purgation.

For the same intention, *viz.* that the Vessels being emptied may withdraw the nourishment from the disease, or sup up the morbific matter, a Purge is prescribed by many. In the Practice of the Ancients against this disease, even as against many others, after Phlebotomy, Preparatives and Purgatives were usually appointed in a constant course, and of late the Chymists with greater boldness do recommend Vomits, and in a Peripneumony prefer it to all other remedies. Yea Phlebotomy being omitted or countermanded, they place the chief Cure in stibiate Vomits: than which rash advice of theirs I know not any thing may be thought of more pernicious. Indeed in rustic and robust bodies sometimes this Cure has been effected without danger, notwithstanding for the most part no less unsuccessful; but in tender constitutions it ought to be reckoned little inferior to poyson. But for what respects Purgation, although it may not be presently convenient from the beginning, because it is then for the most part prejudicial, nevertheless the flowing of the morbific matter being finished, and the effervescency of blood being appeased, we may safely and gently evacuate the body with a loosning Purge.

Purges.

Take of the decoction of Senna of Gereon *four ounces, syrup of Roses solutive an ounce: mix them for a Potion.* Or,

Take the best Senna three drams, Cassia and Tamarinds each half an ounce, Coriander seed two drams: boil them in a sufficient quantity of Spring-water to six ounces, to which strained add syrup of Violets an ounce, clarified with the white of an Egg, and let it be given.

Purgatives are not always to be exhibited, nor ever unadvisedly in this disease: but frequent Clysters, and almost daily are in use; but let them be gentle and emollient only,

only, which eaſily looſen the belly, without any great agitation of humours or blood. For this purpoſe Milk or the Whey thereof is often convenient, with red Sugar, or ſyrup of Violets: Or, *Take the leaves of either ſort of Mallowes, of Melilote, of Mercury, of each one handfull, Linſeed and ſweet Fennel-ſeeds, of each half an ounce, ſweet Prunes, numb. vi. boyl them in a ſufficient quantity of Spring-water to a pinte, to which adde ſyrup of Violets one ounce, Sugar ten drams, ſal Prunella one dram, make a Clyſter.* *Clyſters.*

3. Medicines for the third intention, *viz.* for the diſſolving the Clammineſs of the Blood, are wont to be adminiſtred in form of a Powder, of a Spirit, a Potion, or of a Bolus, according to the manner following. *Things diſſolving the clammineſs of the blood.*

1. Powders.

Take of Crabs eyes two drams, ſal Prunella one dram and half, pearl'd Sugar one dram, make a powder for 6 doſes, one to be taken every ſixth hour, with a proper Julep or Apozeme. Or, *Powders.*

Take of the Tusk of a Boar, (or the Jaw of a Pike) of Crabs-eyes, of each one dram and half, flowers of Salt Armoniack, Powder of red Poppy Flowers, of each half a dram, mix them for 4 doſes.

2. Spirits and Chymical Liquors.

Take of ſpirit of ſalt Armoniack diſtill'd with Olibanum, 3 drams; the doſe from 12 drops to 15 or 20, three times in a day. Or, *Spirits.*

Take Spirit of Urine or Soote, after the ſame manner, three drams.

Take of the ſweet Spirit of Nitre, (viz. often cohobated with Spirit of Wine,) 3 drams, the doſe from 6 drops to ten after the ſame manner.

Take half an ounce of Spirit of Tartar, doſe 15 drops to 20 or 25, in a fit vehicle.

Take of the ſimple mixture one ounce: the doſe is one ſcruple to half a dram, after the ſame manner.

3. Potions.

Take of Carduus-water one pound, freſh Horſe-dung 3 ounces, diſſolve it warm, and filtre it; the doſe is 3 or 4 ounces, twice or thrice in a day, with half an ounce of Syrup of Violets or red Poppyes. *Potions.*

Take of the Leaves of Dandelyon two handfuls, bruiſed and infuſed in half a pound of Cardnus Mariæ water, Treacle-water half an ounce, preſs it out, and adde powder of Crabs-eyes one dram: take 4 or 6 ſpoon-fuls three times a day.

The fourth intention of Healing in reſpect of the ſymptomes greatly urging, doth ſuggeſt divers ſorts of preparations of Medicines. 1. In reſpect of the Feaver, the Juleps and Apozemes above recited are convenient. Moreover, the uſe of Mineral Cryſtal ought to be frequent. 2. For the Cough and difficult Breathings, Linctus's, Eclegma's, and Decoctions, or pectoral Juleps are adminiſtred with ſucceſs. *The cure of the Symptomes.*

Take of Syrup of Jujubes, of Maiden-hair, of each one ounce and half, of Violets one ounce, flowre of Nitre one ſcruple; make a Linctus to be licke now and then. *Linctus's.*

Take of ſyrup of Marſh-mallowes one ounce, Diacodium, red Poppyes, each half an ounce, powder of Crabs-eyes two ſcruples; make a Lohoch, to be taken the ſame way.

Take Syrup of Hyſſop, of Liquoriſh, of each one ounce and half, red Poppy-flowers powder'd, one ſcruple, Crabs-eyes one dram, Lohoch de Pino 6 drams, make a Lohoch, take the quantity of a Nutmeg four times or oftner in a day. *Lohochs.*

Take the roots of Graſs, Chervil, Marſh-mallows, of each one ounce, Figgs numb 4. Jujubes and Sebeſtens, of each numb. 6, Raiſins one ounce, Liquoriſh three drams, Barly half an ounce, boyl them in three pints of Spring-water to two, ſtrain it; the Doſe three or four ounces. *An Apozeme.*

Take Raiſins ſtoned one ounce and half, Filberds numb. 4. cut, Liquoriſh ſliced 3 drams, of Hyſſop-water a pound and half, infuſe them warm in a cloſed Veſſel 6 hours, ſtrain, and adde Syrup of Marſh-mallows an ounce and half, make a Julep, the doſe is 3 or 4 ſpoon-fuls often in a day, ſwallowing it by degrees.

Againſt Watchings. 3ly, Againſt Watchings, *Take Poppy-water* 3 *ounces, Syr. of red Poppies* 6 *drams, Aq. Epidemica* 2 *drams, for a draught, to be taken at night.*

If the Pulſe be ſtrong, and the ſtrength agreeable, *Take Cowſlip-water* 3 *ounces, ſyrup de Meconio half an ounce, for a draught at night.*

For Pain. 4. If the pain be troubleſome about the place affected, *Take Oyntment of Marſh-mallows two ounces, Oyl of ſweet Almonds an ounce and half, mingle them for a Liniment to be applyed with thin Lawn-paper.*

Take of Oyntment of Marſh-mallows and pectoral Oyntment, of each an ounce and half, Linſeed Oyle freſh drawn one dram, to which adde the Plaiſter call'd Emp. de Mucilaginibus, make a Plaiſter for the Region of the breaſt, to be applyed on the place affected.

Fifthly, For the laſt intention of curing which anſwers to the ſecondary Indication, and preſcribes Medicines ripening and expectorating, the following forms are convenient.

Maturating medicines. *Take Linſeed Oyl freſh drawn three ounces, Syrup of Violets two ounces, Hyſſop-water half a pound, mixe them in a Glaſs, take two or three ounces three times in a day, ſhaking the Glaſs firſt.*

Take powder of Olibanum one dram, put it into an Apple made hollow, and roaſt it in hot Embers, let him eat it at night, repeating it three or four times.

Expectorating Medicines. *Take Oyl of Almonds freſh drawn, Syrup of Maiden-hair, of each an ounce and half, Sugar-Candy two drams, ſtirre them well in a Glaſs-mortar untill they are perfectly mixt, make a Linctus to be taken often in a day with a Liquoriſh ſtick; alſo let a ſpoonfull be taken three times a day in a draught of Poſſet-drink.*

As to the reſt, Remedies preſcribed againſt a beginning Conſumption do alſo profit in this caſe.

It would be eaſie to heap up here many Hiſtories and Inſtances of Patients affected with a Peripneumonie; but whereas the ſame order and figure of the diſeaſe, and the ſame reaſons of the Symptoms are almoſt in all, it ſuffices here to note one or two Examples only. *The firſt Hiſtory.* And while I was writing theſe things I am ſent for to a Patient grievouſly ſick with a Peripneumonie. He was aged about Fifty years, lean in body, and of a cholerick temper, by taking cold he fell into a Feaver, with a Cough, with pain of the Breaſt, and difficult breathing: when he had laboured thus four dayes without any remedy or phyſical adminiſtration, I found him in a notable Feaver, with thirſt, and a huge inflammation of the Precordia, breathing very difficultly, with labour of the Thorax, and painfully, with a noiſe of the Bronchia, inſomuch that he ſeemed evidently in the very Agony of death. His Pulſe being ſtrong enough (although quick and diſturbed) I immediately preſcribed Phlebotomy, to eight or ten ounces, by which when he received a little relief, after three hours intermiſſion, a Clyſter being firſt adminiſtred, I ordered him to repeat his bleeding to twelve ounces: Moreover, I ordered Spirit of Harts-horn to be given twelve drops every ſixth hour, with an appropriate Julep, and in the diſtance between I ordered a doſe of the following Powder to be adminiſtred:

Take powder of Crabs-eyes, ſal Prunella, of each one dram and half, Pearles a dram, Sugar-Candy two ſcruples; make a powder to be divided into 8 *doſes.*

Moreover, he took as often as he pleaſed a draught of a pectoral Apozeme. By the uſe of theſe within three hours all the ſymptoms began to abate, and the night following he ſweat, and ſlept a little; the day after I repeated Phlebotomy, and after continuing the ſame Remedies in four or five dayes he intirely recovered his health. The blood we took from him was alwayes in the Superficies viſcous and diſcoloured.

The ſecond Hiſtory. A certain Gentleman of a ſanguine Complexion and a ſtrong habit of body, after an immoderate drinking of Wine contracted a Feaver, with a moſt painful Peripneumonie, inſomuch that thirſt and heat mightily preſſing him, ſitting always upright in his bed or Chair, and breathing ſhort and very frequent, he could ſcarcely, yea almoſt not at all ſuck in air enough to ſuſtain the vital flame. Becauſe he could not undergoe a large Phlebotomy, I drew blood twice or thrice day after day; frequent Clyſters were adminiſtred: Moreover, Apozemes, Juleps, alſo Spirit of Armoniack, and

powder

powders of Fiſh-ſhells were adminiſtred by turns. Within four or five dayes the Feaver ſomewhat abated, alſo he began to breathe better, and ſometimes to take ſhort ſleeps, yet he did always complain of a notable heavineſs of his breaſt, and intolerable oppreſſion of the Lungs; wherefore, when Phlebotomy was no longer ſafe, I applyed very large Veſicatories to his Arms and Thighs, the bliſters in his arms dry'd up in a ſhort ſpace, but thoſe on his legs did not only remain open, but after five or ſix days did run hugely, and afterwards almoſt for a month daily diſcharged great plenty of a moſt ſharp ichor; in the mean time his lungs ſenſibly amended, and at length were delivered from all their burden; laſtly, the little ſores raiſed by the Veſicatories very painfully and not without frequent Medicines could be cured.

SECT. I. CHAP. IX.

Of a Pleuriſie.

The diſeaſes of a Pleuriſie and Peripneumonie are akin.

HOw great affinity there is between a Pleuriſie and Peripneumonie, we have hinted before; *viz.* although either diſtemper is ſometimes ſolitary, and exiſts ſeparately from the other, yet they often happen together, or one while this, another while that, come one upon the other, or ſucceeds it. The foregoing cauſe is the ſame of both, *viz.* a diſpoſition of the blood to be clammy and boyl up withall; alſo, the conjunct cauſe is the ſame, *viz.* an obſtructing Phlegmon in ſome part of the leſſer Veſſels, by reaſon of ſuch a diſpoſition of blood. Moreover, the ſame method of Cure is preſcribed by moſt modern Phyſicians for either diſeaſe: The chief reaſon of the difference whereby they are diſtinguiſhed one from the other, is taken from the places affected, which their Names denote. For the blood prediſpoſed to the enkindling in ſome place an enflaming obſtruction, therefore often plants the neſt of the diſeaſe in the breaſt, becauſe here it burns out more hideouſly, by reaſon of the Hearth of vital fire; and alſo is not freed from the vaporous Effluviums and other Recrements which hinder Circulation. To all which there enſues, that in this Region, the maſs of blood being ſhut up, and not able to paſs through the more ſtrait Conveyances; is not as in the bowels of the lower Belly, opened with any ferment, or new waſht with any watery juice: wherefore, if perhaps the blood, carried through the vertebral Arteries into the membrane encompaſſing the ribs, ſhall ſtick in its paſſage, about the narrowneſs of the Veſſels or inter-ſpaces, the Diſtemper of which we now treat ſucceeds: In like manner, if an obſtruction happen within the paſſages of the Lungs, a Peripneumonie will enſue, as we have declared before. Wherefore, according to the Pathologie of this diſeaſe before delivered, thoſe things which belong to the Theory of a Pleuriſie, as well as the Curatory method, may with ſmall labour be deſigned.

How they differ betwixt themſelves.

The ſeat of a Pleuriſie.

Both the ſenſe of pain, as well as Anatomical Obſervations taken from the Patients dead of a Pleuriſie do plainly atteſt, the ſeat of this Diſeaſe (as often as it exiſts primarily and ſolitarily) conſiſts in the Pleura or Membrane environing the inſide of the ribs. And a true and ſingular Pleuriſie is an inflammation of the Pleura it ſelf, from the abundant flowing in of inflamed blood, growing clammy withall, taking its motion through the vertebral Arteries, with a continual and acute Feaver, a pricking pain of the ſide, a Cough and difficulty of breathing.

The next cauſe of it.

The next Cauſe is the blood obſtructed by reaſon of its clammineſs in the leſſer veſſels and interſpaces of that membrane (in like manner as it is in a Peripneumonie) or being extravaſated, being heaped in the ſame place more plentifully, by reaſon of the ſwelling up, for that cauſe exciting an inflammation. An acute pain ariſeth upon this, by a wound in a part highly ſenſible; alſo there ariſeth a Cough by reaſon of a provocation giving impreſſion to the intercoſtal muſcles; moreover a difficult breathing by reaſon of the muſcular fibres being hurt as to their action; which becauſe they cannot perform long and ſtrong contractions, they are conſtrained to undergoe weak although more frequent Contractions: otherwiſe than in a Peripneumonie, in which that ſymptome ariſeth from a Lung too much fill'd and ſtuffed. The Feaver is caus'd from effervеſcence of blood, and is for the moſt part rather the aſſociate than the ef-

fect of a Pleuriſie. For the blood from what cauſe ſoever driven into a feaveriſh turgeſcency, if it be bound up together in its maſs, will be apt to grow clammy, which together with the Feaver moſt often induces a Pleuriſie or a Peripneumonie, or both of them. From hence we may obſerve this diſeaſe doth frequently vary its kind, and change its place, *viz.* from a Pleuriſie into a Peripneumonie, and on the contrary; afterwards it paſſes from both or either into a Frenzy or a Squinancy: for that the blood while it is boyling throws off its viſcous recrements one while in this part, another while in that, another while in more together, and laſtly it reaſſumes them again, and variouſly transferrs them.

The more remote cauſes of this Diſeaſe.

The more remote cauſes of a Pleuriſie are the ſame as of a Peripneumonie, *viz.* whatſoever ſtirs up the blood, prediſpoſed to grow clammy and alſo to boyl up, and provokes a feaveriſh turgeſcency. Hither appertains exceſs of heat and cold, a ſudden conſtipation of the pores, ſurfeit, drinking of Wines or Strong-waters, immoderate exerciſe; ſometimes the malignant conſtitution of the Air brings this diſeaſe almoſt on every body, and renders it Epidemical: whereto may be added, that this diſeaſe is very familiar to ſome from their conſtitution or cuſtome; ſo that a diſtemperature of blood, induced almoſt by any occaſion, immediately paſſes into a Pleuriſie.

From what we have already ſaid, the ſigns of this diſeaſe do appear manifeſt enough, by which it is well known as to its Eſſence, and is diſtinguiſhed from other diſeaſes, and eſpecially from a Baſtard Pleuriſie and a Peripneumonie. But it is to be obſerved that a pain in the ſide ariſes ſometimes very troubleſome, which while it counterfeits a Pleuriſie, is ſometimes taken for it, although falſly. For in ſome perſons obnoxious to the Scurvy, and the affects of the nervous kinde, ſometimes it happens that a ſharp humour, and very painful deſcends into the Pleura or intercoſtal Muſcles, and being fixt there produces moſt fierce tortures; which diſtemper is yet diſcriminated from the Pleuriſie, inaſmuch as it is void both of Feaver and Thirſt, the Pulſe always abides moderate and laudable, frequently the appetite and ſtrength endure; moreover, the pain is not long fixed or limited to one place, but ſenſibly creeps hither and thither into the neighbouring parts, as the matter ſlides down through the paſſages of the fibres, out of one place into another.

The differences of it.

We meet not with many differences of this diſeaſe; notwithſtanding it is uſed to be diſtinguiſhed, *viz.* to be either true and exquiſite even as we have now deſcribed, or ſpurious, which having its ſeat in the intercoſtal muſcles, or their interſpaces, proceeds from winde, or a ſerous and ſharp humour heaped up in the ſame place, and raiſes a pain leſs ſharp, without ſo much as an inflammation or feaver: And whereas the grief is planted externally, the Patient for the moſt part lyes better on the oppoſite ſide, otherwiſe than in a true Pleuriſie. Secondly, a Pleuriſie is either ſingle, or complicated with a Peripneumonie or ſome other diſtemper, and ſo it is either primary, or ſecondary, or join'd with ſome other affection.

The Prognoſticks.

As to the Prognoſticks of this diſeaſe, *Hippocrates* hath obſerved many certain tokens whereby a good or evil event is ſignified to patients ſick of the Pleuriſie. To run through each of theſe, and to unfold them with Commentaries added to them, we have neither leiſure, nor doth it ſeem worth our endeavours. The chief thing of all in a Pleuriſie, is, that the diſeaſe be preſently diſpatch'd, partly with a free and frequent bleeding, and partly by a Critical Sweat, ariſing about the fourth day, or before the eighth; or theſe things not duely ſucceeding, it will be prolonged, and then moſt frequently a Peripneumonie or Empyema, or a collection of corrupt matter between the Breaſt and Lungs, or both diſtempers do ariſe upon this diſeaſe; from which there follows a ſolution of the diſeaſe but ſlow and incertain, and moſt frequently full of dangerous chances.

A Peripneumonie coming upon a Pleuriſie not preſently cured (as it is often wont to be) all our hope is placed in digeſting maturely the Spittle and quick Expectoration thereof: for if this be laudable and plentiful, and eaſily and haſtily thrown off, it doth often finiſh both diſeaſes intirely. Notwithſtanding, it is not therefore a conſequent that the matter of a Pleuriſie is derived from the ſide into the Lungs by I know not what blinde paſſages, or that the ſame being ſweat out of the Pleura into the cavity of the breaſt is imbibed by the Lungs, and at length drawn upwards through the paſſages, and excern'd forth. But when a Peripneumonie ariſes on a Pleuriſie, and the matter impacted in the Lungs begins to be evacuated by Spittle, ſo that the affected places of the Lungs are continually emptyed; the blood reſumes

the

the other matter fixed in the Pleura, and carryes it to the Lungs where the places of conveyance are open, to be ejected by Spitting. But if the Pleuriſie be cured neither by it ſelf, nor aſſociating with a Peripneumonie, then at length either by an Impoſthume made in the Pleura or in the Lungs, an Empyema or corruption between the Breaſt and Lungs ſucceeds; or all the matter being brought into the Lungs and there putrified, looſning the unity of the Viſcera, it propagates a mortal or ſcarce curable Conſumption.

The Cure thereof.

As to the cure of a Pleuriſie, foraſmuch as the ſtate of this Diſeaſe, the Criſis and tendencies are manifold, divers curatory Indications offer themſelves according to their various regards; and as occaſion ſerves, according to the advice of a prudent Phyſician, they ought to be appointed in the beginning, and ſometimes altered or continued. For ſurely one Method is convenient for a ſolitary and ſimple Pleuriſie, and another if it be complicated with a Peripneumonie: Beſides it behoveth to ordain another and another if perhaps a Criſis be expected by Spitting, or matters growing worſe, the diſeaſe is either paſſing into an Empyema, or tends to a Conſumption. As to the three later caſes, that is to ſay, when a Pleuriſie commencing, paſſes into a Peripneumonie or Empyema, or laſtly into a conſumptive diſpoſition, there is deſigned an appropriate way of curing in the pathologies of each of theſe diſeaſes particularly delivered. But as to what appertains to our preſent purpoſe, three Indications offer themſelves for a primary and ſimple Pleuriſie, and they are curatory, preſervatory and vital.

The firſt Indication.

I. The firſt Indication takes care that the Inflammation or obſtruction of blood in the Lungs by all manner of means with all expedition be removed; for which intent phlebotomie in every Age by all phyſicians (excepting ſome Fanatick or falſe Chymiſts) is wont to be preſcribed, as a principal remedie: The reaſon of which is altogether the ſame as in a Peripneumonie and many other diſtempers, cauſed by reaſon of a ſtop of blood in ſome place, and ſo an accumulation: Becauſe that the veſſels bringing blood being much emptyed, do not only reſcind the nouriſhment of the diſeaſe, but drink up the matter which is the conjunct cauſe thereof, and convey it to another place. Wherefore blood is to be freely drawn away in a Pleuriſie, if the ſtrength endure it, and the Pulſe be ſtrong. And ſurely it is far better that the firſt time and every time after (as often as there is need to repeat it) blood be more largely emitted, than to do it more often and more ſparingly. For very many portions of the blood growing clammy and degenerating into viſcouſneſs, are heaped up about the place affected; which, unleſs they are call'd away from thence by emptying the Veſſels through large phlebotomie, and in a great part let forth, the letting of blood will be fruſtrated of its deſired effect. Wherefore, that Phyſicians preſcribe blood in a Pleuriſie to be drawn out even to ſwooning, ſeems not incongruous to reaſon, although that practice is not raſhly to be attempted, for that every evacuation ought to be proportioned to the tenour and tolerance of the ſtrength, which rule ſuch a phlebotomy doth exceed.

Phlebotomie neceſſary almoſt in all Pleuriſies.

What Vein is to be opened in a Pleuriſie.

But though there is almoſt a general conſent of all Phyſicians to breath a vein in a Pleuriſie, notwithſtanding there was ever an earneſt contention about the place, what Vein ought to be opened. *Hippocrates* and *Galen* opened a Vein on the ſame ſide of the patient; afterwards the *Arabians* and their followers the *Italians*, and *French*, did either open the *Saphene* or the *Baſilica* of the oppoſite ſide, damning the phlebotomy of the ſame ſide by Bell, Book and Candle. Yet in the later generation, the practice of the Ancient *Greeks* by little and little revived, ſo that ſome did dare to make inciſion on the ſame ſide; yet always one ſide judged the others of the oppoſite perſwaſion as it were guilty of murder, as often as any unlucky event did happen. So that while among Phyſicians about phlebotomy there was no leſs a contention than among the *Jews* and *Samaritans* about the Sacred place of Worſhip, at length the Doctrine of the Circulation of the Blood held out like a new Light by the moſt renowned *Harvey*, diſcuſs'd all the clouds of this Controverſie; ſo that immediately it clearly appeared to be almoſt the ſame thing, whether inciſion be made in the Vein on the affected or oppoſite ſide of a patient ſick of a pleuriſie; although in our Age Cuſtom hath prevailed firſt and rather to open the Vein of the affected ſide. Notwithſtanding a Vein being opened in either Arm draws nothing at all immediately from the vertebral Arterie or from the pleura; they are only the branches of the Azygos, or of the vertebral vein that receive the blood out of the place affected: but that they may accompliſh this, they are not unloaded in any other manner, but

Various opinions are recited.

that

that the quantity of the whole blood be abated by phlebotomie whereſoever made. Onely this may be affirmed for opening rather the vein of the affected ſide, that the Baſilick vein being unloaded, the Arteries of the Arm receive the more ample proviſion of blood; from hence the bloody ſtream of the vein Aorta runs down more ſwiftly from that ſide towards the branches of the Arm, and perhaps in the interim of its quick paſſage it infuſes leſs blood into the vertebral Arteries, for the nouriſhment of the diſeaſe. As to that opinion, that the blood is ſometimes more plentifully carryed from place to place, that from hence the right Lung or Liver being beſet with an inflammation or obſtruction, the right part of the head is in pain, and of the face grows more red; I ſay this ſometimes is brought to paſs, becauſe the patients do conſtantly lie in their bed on the ſide affected; wherefore, the Veſſels being compreſs'd, the blood ſtays longer in other parts of the ſame ſide while it is circulating. But of theſe things we will make a more diligent ſearch when we ſhall render the Hiſtory and Ætiologie of phlebotomy.

Cupping-glaſſes with Scarification ſupply the place of blood-letting.

But if phlebotomy by reaſon of a weak pulſe, and fainting of the animal function, neither ought to be at firſt adminiſtred, nor repeated, though the pain be moſt urging; Cupping-glaſſes with Scarification do well ſupply the turn hereof, being applyed to the place pained. *Riverius*, and *Zacutus Luſitanus* have cited notable Examples of cures effected by this remedy. And ſurely this practice ſeems to lean upon a reaſon ſtrong enough; for the blood being drawn away from the ſide affected, that which is lodged in the neighbouring veſſels, being the conjunct cauſe of this diſeaſe, is moved with it, and partly drawn away, and partly turned to its Circulation. Moreover, to remove an inflammation of the Pleura, beſides withdrawing blood by a free Phlebotomy or Scarification, alſo the ſerous and other excrementitious humours ought to be gently ſolicited and excerned as well out of the maſs thereof, as out of the bowels, by Stool, Urine and Sweat. The more ſtrong purgatives are deſervedly prohibited, becauſe they diſquiet the blood, and conſtrain it to be impacted more deep into the places affected. And that certain renowned Chymiſts, viz. *Angelus Sala*, *Hartman*, *M. Rulandus*, with many others, do audaciouſly exhibit Vomits of Stybium to any afflicted with a Pleuriſie, and magnifie it for the beſt remedy, ſeems to me neither ſafe nor congruous to reaſon; the only reaſon of helping, as I think, and that very uncertain, and full of danger, may be, *viz.* that the medicine operating more vehemently while the patients ſuffer exolution of ſpirits or ſwoonings, all the vigour and turgeſcence of the blood abates, and for that cauſe the nervous Fibres remit their wrinklings or painfull contractions, and the Veſſels carrying blood being much emptyed, do ſuck up the morbifick matter: In the mean time, there is danger leſt the humours being violently diſturbed, ruſh more impetuouſly to the part affected; at leaſt, leſt the Spirits being too much dejected, and the work of Nature diſquieted about the digeſting or ſeparation of the morbific mater, ſtrength ſhould utterly fail, before the diſeaſe be cured. Yet in the mean time, Clyſters are of frequent or daily uſe: yea ſometimes more benigne ſolutive purgatives are allowed, provided that the Feaver be not very intenſe. Julips and temperating Decoctions and things gently moving Sweat and Urine, as we have preſcribed before for a Peripneumonie, are alſo here convenient; but let all hot and ſharp things, whether aromatick, or endowed with a vinous ſpirit be carefully declined.

Whether Purges and Vomits are to be taken in a Pleuriſie.

What other kind of Remedies are convenient in this diſeaſe.

The ſecond Indication preſervatory.

II. The ſecond Indication preſervatory, deſigned againſt the clammineſs and boyling up of the blood, preſcribes Medicines of that ſort which conſiſting of a volatile or alcalizated Salt, do deſtroy the combinations entered into, of the acid and fixed or otherwiſe diſtempered Salts, with the other more thick particles. For which intent the eyes or claws of Crabs, the tooth of a Boar, the Stone of Carps, the jaw of a Pike Fiſh, the Bone in the heart of a Stag, the Priapus of a Hart, Sal Prunella, Salt of Coral, Salt of Urine, or volatile ſalt of Harts-horn, powder of Goats-blood, infuſion of Horſe-dung, Spirit of Harts-horn, of ſalt Armoniack, Spirit of Tartar, the ſimple mixture, mineral Bezoar, Diaphoretick Antimony, flowers of ſalt Armoniack, are very famous Remedies in a Pleuriſie.

The third Indication vital.

III. The third Indication vital which provides that the ſtrength and vital heat be preſerved during the courſe of the Diſeaſe in due tune and ſtate, gives in precept firſt an apt kind of food, and moreover Cardiac and Anodyne remedies, and thoſe which ſeaſonably occur to other ſymptomes, if perhaps they ariſe. Firſt, in a true Pleuriſie, a moſt thin Diet ought to be appointed, *viz.* of meer Oatmeal and Barley; and for ordinary drink, a Ptiſan or Poſſet-drink rather than Beer alone:

alone is convenient: although in an outragious thirſt this alſo is to be allowed of in a moderate quantity. Moreover, for quenching thirſt, Juleps, Apozemes, and Emulſions are taken by turns; to all which adde Sal Prunella. Secondly, let only the temperate Cordials be adminiſtred which mildly do recreate the animal ſpirits, and not at all intend the kindling of the blood, burning out of its due proportion. For theſe intentions, the water of *Carduus Mariæ*, *Carduus Benedictus*, of Balm, Borage, Cowſlips, Black-cherries, are uſually given with ſucceſs: whereto let the powder of Pearls and Coral be added. Thirdly, It behoveth to adminiſter Anodynes, both inwardly, to provoke ſleep in caſe it be very much wanting, and alſo externally, to alleviate the pain of the ſide. Of the former kinde the more uſual are the diſtill'd water, ſyrup and powder of red Poppies, which are eſteemed Specificks in a Pleuriſie and in a Peripneumonie: Moreover, when the pain is very acute, and watchings inſtant upon the patient, they may lawfully drink Diacodiates. Againſt pains, Liniments, Fomentations, Cataplaſmes, and ſometimes the hot bowels of Animals newly ſlain are convenient to be applyed. Theſe are the principal Intentions of healing which ſeem requiſite to cure an exquiſite and ſimple Pleuriſie, before it contracts a Peripneumonie to it ſelf, or paſſes into it, or into an Empyema. It only remains to adapt to each of theſe the more ſelect forms of Medicaments.

Cardiacks.

Anodynes.

Firſt therefore in the beginning of the Diſeaſe, for taking away the Phlegmon, Juleps, Apozemes, Powders, and gentle looſening Clyſters are wont to be preſcribed.

Forms of Remedies.

Take water of Carduus Mariæ eight ounces, red Poppies 4 ounces, Syrup of red Poppies one ounce, ſal Prunella one drachm, make a Julep, the doſe two or three ounces every third hour.

First for the removing the Inflammation. Juleps, &

Take of Graſs-roots 4 ounces, Barly half an ounce, Apple-parings one handfull, Raiſins one ounce, Liquoriſh two drams, boyl them in three pints of Spring-water to two; clariſie the ſtrained liquor, adding Syrup of Violets one ounce and half, Sal Prunella one dram and half, make an Apozeme, the doſe 3 or 4 ounces often in a day.

Apozems.

Take of Sal Prunella two drams, flowers of Nitre one dram, powder of red Poppy flowers two ſcruples, Sugar-candy 4 ſcruples, make a powder, the doſe half a dram three or four times in a day.

Powders.

Take of the Decoction of Mallows, leaves and roots, with Prunes, one pound, ſyrup of Violets three ounces, Sal Prunella one dram, make a Clyſter.

A Purge.

Take Caſſia bruiſed two ounces, Tamarinds one ounce, Damask-Roſe leaves one handful, Coriander-ſeeds two drams, boyl'd in Spring-water to a pint, ſtrain it, and adde Syrup of Chicory with Rhubarb two drams, clariſie it with the White of an Egge, the doſe is 5 or 6 ounces in the morning, continued for two or three dayes.

Secondly, The following are of uſe to diſſolve the clammineſs or coagulating viſcoſity of the blood, in form of a Drink, of a Powder, and of Spirit.

Secondly for the taking away the clammineſs of the Blood.

Take freſh Horſe-dung 4 ounces, Carduus-water one pound and half, infuſe it warm for two hours, after filtre it, to which adde ſyrup of the juice of Dandelyon, or of Chicory, two ounces, Spirit of ſalt Armoniack one dram, let five or ſix ſpoonfuls be given three or four times in a day.

An Infuſion of Horſe-dung,

To this end Water of Horſe-dung wonderfully profits.

Take of Horſe-dung 4 pounds, leaves of Carduus Benedictus, Carduus Mariæ, Scabious, Pimpernel, of each three handfuls, upon them cut and mixt together pour ſix pints of new Milk, diſtill them in common Organs. The Doſe is from two Ounces to three, either with it ſelf, or with other diſtill'd Waters, in form of a Julep.

And diſtilled water.

For the ſame uſe, the Tinctures, or the ſolutions of other Dungs are adminiſtred by ſome Phyſitians, and highly magnified by them. *Helmont* commends the dung of an Oxe, *Panarolus* commends Pidgeons-dung, others the white dung of a Cock, for the Pleuriſie. *Epiphanius Ferdinandus* was wont to give with ſucceſs the Decoction of Tobacco with new Wine; *Valeriola* by experiment as a familiar remedy made uſe of the Decoction of the Flowers of red Poppies: The renowned *Sylvius* preſcrib'd the following mixture to be taken by Spoonfuls, within ſhort ſpaces of time.

Sylvius's Anti-Pleuritick.

Take

Take Parſly and Hyſſop water, of each two ounces, Fennel-water one ounce, Treacle-water ſimple half an ounce, Laudanum Opiate 4 grains, Salt Armoniack half a ſcruple, Syrup of red Poppies one ounce. Mingle them.

Frederick Deckers adds to this the *Powder of Crabs-eyes*, and *Mineral Bezoar*, *of each one ſcruple.*

Medicines chiefly efficacious for this uſe are wont to be adminiſtred in the form of a powder: for examples ſake,

Powders. *Take Powder of Crabs-eyes two drams, Sal Prunella one dram and half, of the flowers of red Poppies half a dram, mix them and make a Powder, the doſe half a dram, three or four times a day, in a convenient Vehicle.*

Inſtead of Crabs-eyes, the powder of the Jaw of a Pike, or the Tusk of a Boar, or the Pizzle of a Stag, or Bull, are uſed, and if they prove ineffective, try the following.

Take of Antimony Diaphoretick, or the Ceruſs thereof, or Bezoar Mineral, two drams, the volatile Salt of Harts-horn half a dram, the powder of red Poppies two ſcruples, make a Powder; The doſe from one Scruple to half a dram, three times or oftner in a day.

For the ſame intention of curing it was, that *Riverius* gave of the Powder of *Soot* from half a dram to a dram; others the powder of Pidgeons dung, or of a Cock. And indeed by reaſon of this analogie, whereby the dungs of Animals ſtored with volatile Salt, do ſuccour in this diſeaſe; it is probable, the dung of a Dog doth no leſs conduce to cure a Pleuriſie than a Squinancy, and ſo much the rather, becauſe theſe diſeaſes frequently change their forms among themſelves, and one aſſumes the ſpecies of the other. Chymical liquors endued with a volatile Salt do alſo notably help ſometimes in a Pleuriſie.

Chymical Liquors. *Take of Spirit of Blood two drams, Water of red Poppies three Ounces, the Syrup of the ſame one ounce. Let it be given by ſpoonfuls often.*

Take ſpirit of Sal Armoniack, diſtill'd with Olibanum, three drams, the doſe from 12 drops to 15 or 20, twice or thrice a day, in any convenient liquor. After the ſame manner the Spirit of Urine, Soot, or Harts-horn may be given.

Take the Spirit of Tartar 3 drams, the doſe one ſcruple in a convenient vehicle.

Take of the ſimple mixture 3 drams; Doſe from one Scruple to half a dram.

What remedies the third intention requires. As for the third Intention, beſides a thin diet, Cardiac remedies and Anodynes are preſcribed. Examples of the former kinde for the firſt Indication may be ſupplyed by Juleps and Apozemes; for the ſecond Indication they may be ſupplyed by Spirits and Powders. Anodynes are preſcribed to be exhibited inwardly upon watching, and very intenſe pain, according to the following method.

Hypnotick Anodynes. *Take of Poppy-water two ounces, the ſyrup of the ſame 6 drams, Spirit of Harts-horn 12 drops, make a draught to be taken at Bed-time.*

If we muſt proceed higher, *Take Carduus-water two ounces, Diacodium from three drams to half an ounce or 6 drams, Spirit of Sal Armoniac with Frankincenſe half a ſcruple, make a draught: and ſometimes although rarely Laudanum is expedient, which timely given, inaſmuch as it excites ſleep, and moves ſweat and Urine, does greatly profit.*

Take Cowſlip-water two ounces, Tartariz'd Laudanum from 16 drops to 20. the Spirit of Blood half a Scruple, Syrup of Violets two drams, mingle them for a draught.

External Anodynes. Outward Anodynes in form of a Liniment, Fomentation, and Cataplaſm, are uſually preſcribed.

Take Ointment of Marſhmallows two ounces, Oyl of Almonds one ounce, Dogs-turd two drams, mix them by grinding together.

Take the Plaiſter of Mucilages two ounces and a half, moiſtened with Linſeed-Oyl, and applyed upon Lawn-paper.

Take the tops of both Mallows, the leaves of Mercury and Beetes, of each 4 handfuls,

boyl

boyl them in Spring-water, and ſtrain'd, let it be uſed for Fomentation.

Take the Dregs of the herbs after the liquor expreſſed, to which adde the bran of Oats 6 ounces, Linſeed and Fœnugreek-ſeeds, of each two Ounces, Oyntment of Marſh-mallows two ounces, make a Cataplaſme.

An Hiſtory.

There is no occaſion to go far for Hiſtories and Inſtances of patients ſick of a Pleuriſie, for a notable Example of this diſeaſe is now under our hands: to wit, A very lovely Maid, frequently and as it were habitually obnoxious to that diſtemper, is committed to our care. This Virgin being very amiable, of a ſanguine complexion, but of a weakly conſtitution, upon any the ſmalleſt occaſion, *viz.* by taking cold, or by errors in any of the ſix Non-naturals, yea ſometimes from the meer alteration of the year, or the air, has for many years been wont to fall into a feaver; whereupon immediately pleuritick pains, with a Cough and difficult breathing come upon her, and afterwards for the moſt part hideous Convulſions; under which paſſion in time paſt ſhe did ſo grievouſly labour, that frequently every year for or above ſix months ſhe was conſtrain'd to keep within her Chamber. But of late, although ſhe is not acquitted from this hurt, yet ſhe is ſeldomer puniſh'd with it. The laſt year all the Summer, and almoſt the Autumn, ſhe enjoyed her health indifferently; in the beginning of Winter ſhe took her bed with this ſickneſs, and now about the end is again ſick. A pain from the Pleuriſie conſtantly afflicts her right ſide, where the blood ſticking in its paſſage, and being extravaſated about the intercoſtal muſcles, the Fibres being provoked, fall into a moſt troubleſom condition, together with a convulſive motion of Coughing, and almoſt perpetually repeat it: In the mean while her Lungs being ſound enough, and open as to the paſſages, do readily convey the blood without any ſtop by its clammineſs, (which frequently is the author of a Peripneumonie.) No remedies that are uſed will do her good without phlebotomie, which continually is ſo very neceſſary, that upon every return of the ſickneſs, in ſpite of all things, we are compelled three or four times to repeat it, and ſometimes oftener: the blood let out in the Superficies hath conſtantly a viſcous and whitiſh filme. This diſeaſe was ever a ſimple Pleuriſie void of a Peripneumonie, and for cure ſhe with conſtant ſucceſs uſed the following method.

Take Spirit of Sal Armoniack diſtilled with Gum Ammoniacum three drams; take from 15 drops to 20, three times a day, with the following Julep.

Take Carduus and Black-Cherry water, of each ſix ounces, Hyſterical Water one dram Sugar 6 drams. Between whiles ſhe took a doſe of this Powder with three ounces of Apozeme.

Take Powder of Crabs-eyes, of a Boars tooth, Sal Prunella of each one dram, make a powder for 6 doſes.

Take Graſs-roots 3 ounces, candied Eringo one ounce, Shavings of Ivory and Hartshorn of each two drams, the Parings of Apples one handful, Raiſins one ounce, boyl them in three pound of Spring-water to two pound, to it ſtrain'd, adde Syrup of Violets one ounce, ſal Prunella one dram, mix them, and make an Apozeme.

Clyſters of Milk with Syrup of Violets were injected, ſometimetimes every, ſometimes every other day. If Opiates, however mild, were given to allay pain, upon it a pain and drouſineſs of the head, and Convulſions did infeſt her moſt grievouſly.

SECT. I. CHAP. X.

Of an Empyema.

An Empyema is the product of other diſeaſes of the breaſt.

IT is clearly manifeſt from what hath been ſaid before, that a Pleuriſie, and Peripneumonie, are diſeaſes not only akin but commutable among themſelves, and ſucceſſive to one another; Moreover, as well this as that, and frequently both together, not being well cured, doe paſs into an Empyema. For when a Phlegmon rais'd about the Pleura is brought to ſuppuration, at length the Impoſthume being broke, the matter falling into the cavity of the Thorax, produces this diſeaſe. In like manner ſometimes it follows from the Lungs being inflamed: inaſmuch as the ichor accumulated about the place affected, turns into a thick and yellow humour by a long digeſtion, which unleſs it be ejected by a Cough, either ſenſibly corrupting the inner ſubſtance of the Lungs, it cauſeth a conſumptive diſpoſition, or diſſolving the unity of the intire Lungs, and at length corroding the outmoſt membrane, it ſlides down into the breaſt, and ſo engenders an Empyema. Any one labouring with an Impoſthume or ulcer of the Lungs, although he do ſpit out abundant and fœtid matter (as it frequently happens in an Impoſthume of the Lungs,) is not therefore accounted obnoxious to an Empyema. For in truth, by the common acceptation of this Term is ſignified a Collection of rotten matter within the cavity of the Thorax, by which the Organs of breathing are oppreſſed: but that rotten matter is wont to have a conflux thither either by a Pleuriſie or Peripneumonie, (and ſometimes perhaps from a Squinancy) brought firſt to ſuppuration and afterwards broke.

It rarely or never begins of it ſelf.

Foraſmuch as an Empyema never begins primarily and of it ſelf, but for the moſt part is the effect or product of other diſeaſes, not duely cured, it will not be requiſite to make much inquiſition about the cauſes thereof. The formal reaſon or conjunct cauſe thereof is known well enough, (to wit) it is a purulent matter, poured out from the Pleura, or the Lungs, or the Larinx, into the cavity of the Thorax. But the other proper cauſes of the previous effects, appertain to the Etiologies of every of them.

What the morbific matter is.

There is a certain diſpute about the morbific matter; for ſome contend that it is meer corruption, others not that, but that it is a purulent matter, of which opinion is *Johannes Heurnius*, who averring a purulent matter for the conjunct cauſe of an Empyema, diſtinguiſhes between this and mere and pure Pus, affirming this to come to paſs *from a bloody nutritious humour*, i. e. *from the blood it ſelf ſomewhat corrupted, but capable of digeſtion, but that a purulent matter is an excrementitious humour*, viz. *a Serum or Ichor*, which proceeds from the blood obſtructed and hindered ſomewhere in its Circulation. From hence we may obſerve concerning an Impoſthume which affords true and laudable *Pus* or matter, that it is for the moſt part compact, every way ſhut up and wrapt up together either in a bladder, or (as it were) within private Apartments, and then after it is maturated and broken, pours out the contained humour, and is ſoon and eaſily healed. But an Impoſthume affording a purulent matter forms its neſt not ſo bound up and encompaſs'd with walls, but for the moſt part unequal and crooked, and being broken rather pours out filthy blood or gore than matter or Pus, and then by reaſon of the ſucceſſive ſource of excrementitious humour, it is very difficultly healed.

The difference of Pus and a purulent matter.

Moreover, we are to conſider, that each humour as well Pus as purulent matter doth ſometimes ſtink notably, and is alſo ſometimes very free from any bad ſavour. Some maturated and broken Impoſthumes pour out fetid matter, others matter without any ſmell. I have often obſerv'd Impoſthumes of the Lungs, as well as Phlegmons of other parts to have this ſeveral diſtinction. Purulent matter from many Ulcers ſtinks ill; the Spittle of conſumptive perſons which is eſteemed to be very dangerous, for the moſt part is without any ſcent. It is uſual where the ſide is opened by reaſon of an Empyema, that at firſt the matter flows out not unſweet, but after two or three days the air having more frequently enter'd into the orifice, it ſtinks moſt horribly: which ſtench notwithſtanding after an injection of ſome aromatical or vinous Spirit vaniſhes again in a ſhort ſpace. But it would be a thing of much te-

Why both ſometimes with, and ſometimes without ſtench.

diouſneſs

diouſneſs to denote the particular reaſons of each of theſe accidents and alterations, for that never ſo little alteration of the Pus or purulent matter, both cauſes and removes the ſtench from them. When the ſulphureous particles are equally digeſted, and being ſubjugated to the ſalts are contained in a mixture, there is no ſtench; but as ſoon as they being looſed begin to fly away, and carry the ſalt particles with them (whereby they are ſharpened) they diſperſe a very bad ſtench round about. But whereas an Injection or Lotion with vinous and aromatical liquors, being ſometimes adminiſtred to a putrid Ulcer or neſt of an Empyema, frequently removes all ſtench; the reaſon is, becauſe the ſides of an Ulcer, no otherwiſe than as a ſtinking pot, infect the contained liquor as with a certain ferment, and ſo impreſſe a ſtink: but when that ferment of the veſſel or bowel is waſhed or overcome by a well-tempered and ſtrong liquor, then that propagation of a ſtench ceaſeth. From hence follows not always an ill ſign, nor is it ſo very good, if the Spittle of conſumptive perſons, and the Impoſthumes of ſuch as are Empyematical are excerned either with, or without ſtench; for that I have known it to have been to ſome healthful, and to others deadly in either caſe. Moreover a more certain Judgment is not to be taken from thence, that the ſpittle of ſome conſumptive perſons floats upon the water, and that of others ſinks.

Neither the cauſe of an Empyema.

But although we do not much diſapprove of that diſtinction of Pus and purulent matter, notwithſtanding we adjudge neither only this, nor always that, to be a conjunct cauſe of an Empyema. Whenas this diſeaſe ſucceeding a ſimple Pleuriſie, ariſes from an Impoſthume being ſuppurated and broken in the ſide, it is moſt commonly pure and meer Pus, which falling into the cavity of the breaſt, engenders that diſeaſe. But if an Empyema be an Offspring of a Peripneumonie (unleſs an Impoſthume of the Lungs intervene) the ichorous matter being accumulated about the place of the phlegmon, and after thickening by meer concoction, it wounds the Lungs, and at length making a hole through the membrane encompaſſing it, and flowing out into the Thorax, produces an Empyema. That matter is rather to be accounted purulent than meer Pus.

The Signs of an Empyema whilſt beginning.

The ſigns of an Empyema either prognoſticate it while it is in *fieri*, or indicate it plainly done. Some foregoing diſeaſes are eſteemed of the former ſort, whoſe iſſue this uſes to be, of which ſort are the Pleuriſie, Peripneumonie, and Squinancy, alſo ſometimes a ſtroke or wound of the breaſt, and ſometimes other diſtempers thereof, not well cured, nor diſcharged; out of which the ſuſpicion will be greater of an Empyema to enſue, if after one or two weeks without abundant Spittle, the ſhivering of an Ague and fainting of the Spirits overtakes one. Then after fourteen or twenty days, there will be ſigns of an Empyema fully made, as difficult breathing, a heavineſs of the breaſt, a ſwimming to and fro of the matter, and a ſenſe of pain from the poſition of the body chang'd, thirſt and a ſmall feaver almoſt continual, redneſs of the cheeks, diſquietneſs of the whole body, and watching.

When perfect.

An Empyema is diſtinguiſhed many ways, *viz.* Firſt according to the diſtemper going before, whoſe Offspring it is; alſo according to its ſeat, one while in the right ſide of the breaſt, another while in the left, and another while in the whole capacity thereof; and laſtly, as to the morbific matter, which is either meer and laudable pus, or purulent matter, and this one while gentle, and benigne, and another while ſharp and ſtinking.

Prognoſticks of this diſeaſe.

Prognoſticks of this diſeaſe begin as well before as after inciſion; the former determins whether the ſide ought to be opened or not, alſo it preſages of what ſort the event will be, either with or without opening. If an Empyema ſucceeds more ſlow, after the firſt diſtemper, to wit not before the thirtieth or fortieth day, whenas the ſtrength is very much worn, and the Lungs are vitiated, and their ſtructure hurt; and alſo if a feaver remain as it were hectick, the breathing ſhort and painful, the Pulſe weak and quick, with cold ſweat, and with a Diarrhea or waſting looſneſs, and frequent faintings of the Spirits, then the ſtate of ſuch a perſon being evidently deſperate, doth not admit of any opening; let a Phyſician ſuffer him to dye without bleeding, leſt he ſeem to murder him. But if on the contrary, after manifeſt ſigns of an Empyema more maturely perfected, the painfulneſs of the Lungs or ſide, as alſo the feaver and other ſymptomes abate, and the Pulſe, and ſtrength of the Spirits are in vigour, it will be lawfull ſafely to advance to cutting, and thereby to hope a happy ſucceſs. Inciſion being made, if white Pus duly concocted or otherwiſe laudable skip out with eaſe, and thence the heavineſs of the breaſt and difficult breathing

abate, and the patient is better as to the other paſſions, there will not the leaſt doubt remain of his cure: but if no Pus, or that which is bad, if thin, ſomething bloody, or ſtinking, flow from the ſide being opened, we can conceive thereby but ſmall hope of recovery.

What it ſignifies when the Probe is guilded by the Empyematical matter.

Hippocrates among the preſaging ſigns of a mortal Empyema, recounts that of the Probes being coloured by the Pus, as by fire; or what we often obſerve, and ſometimes without any evil event, if the ſilver Probe being put into the orifice of the open'd ſide, be preſently ting'd with a colour as it were of Gold or Copper; which ſurely ſignifies no other thing but that the ſulphureous particles of the pus, or purulent matter are ſo exalted, and looſen'd from the bond of mixture, that eaſily departing they may be affix'd to any other body, and eſpecially ſilver, whereunto they are akin. Sometimes I have ſeen Veniſon kill'd by long and weariſome hunting, preſently bak'd in an Oven for Entertainment, become not only moſt tender, inſomuch that it might be taken out with Spoons, but even to have guilded a bright ſilver Spoon at the firſt touch. The reaſon whereof is the ſame with the former; *viz.* that the fleſh was ſo diſpoſed to putrefaction by too much exerciſe while the animal lived, that the particles of the Sulphur being exempt from Concretion, and apt to fly away, preſently adhere to any other fit ſubject: But this by the by.

The cure of the diſeaſe.

As to what belongs to the curatory part of an Empyema, we ought chiefly to conſider whether the ſigns of this diſeaſe, as being now perfected, be certain, or doubtfull. In the former caſe there will not be much need of Medicine, but the body only being prepar'd before-hand, we may immediately proceed to the opening of the ſide. Wherefore, if from a Pleuriſie or Peripneumonie not rightly cur'd, or from blood poured out after a ſtroke, fall, or inward wound, a fluctuation of Pus or purulent matter, or bloody within the cavity of the Thorax, be perceived, with no Spittle, or with little, there will not be need that we dwell longer on maturing or expectorating Medicines, but the belly being looſened, and the blood and humours rightly temperated by Juleps, Apozemes and Anodynes, either that a bare Section be ordained; or that in tender and fearful perſons a Cautery be applyed between the 6th and 7th Vertebra, and after the Eſchar is rais'd, the Inciſion-knife be obliquely forc'd by little and little, towards the hinder and upper part, untill it penetrate into the very Cavity of the Thorax; afterwards, a little ſilver Pipe being put in, let the contained matter be ſent out by degrees; notwithſtanding in ſuch manner that, if his ſtrength will bear, an evacuation of the whole humour be accelerated; for a portion thereof being left within, often contracts a hideous ſtench, within a few days (by reaſon of the Air, as is aboveſaid, being admitted) which evil, that it may be provided againſt, or ſoon removed, a vulnerary and abſterſive liquor is to be caſt in twice or thrice a day by a Syphon or Syringe. It will not be requiſite to preſcribe particularly the other things belonging to this operation, and the proceſs thereof; for that each of theſe things are evidently known to any of the more expert Chirurgeons, and are uſed in familiar practice. After inciſion and the appertaining adminiſtrations rightly performed, there will not be much beſides left for a Phyſician to doe. It is convenient there be a right courſe of Diet, a frequent looſening the belly (as often as need ſhall be) by Clyſters; and moreover it behoveth us to preſcribe remedies vulgarly called Vulnerary, which hinder the diſſolution of blood, and the profuſion thereof into ſeroſities injurious to the breaſt.

The cutting or opening the ſide.

The Empyematical matter is wont to ſtink by the often admiſſion of the Aire.

Thoſe things which perſwade or forbid a Paracenteſis.

But if the Signs of this Diſeaſe be leſs certain, and (as for the moſt part it is wont to be, from a Peripneumonie and Impoſthume of the Lungs going before) altogether doubtfull, Inciſion muſt not too ſoon or raſhly be made. For I have known ſome ſpitting forth a purulent matter, yea a fetid Pus, with painfull breathing, and heavineſs of the breaſt, to have undergone a Paracenteſis in vain, and not altogether exempt from hurt. Wherefore, until it is apparent by pathognomic ſigns that it is an Empyema confirm'd, expectorating medicines (as are before preſcribed for the cure of a Peripneumonie) as alſo things gently moving evacuation by Urine and Sweat, may be uſed for ſome time: But theſe availing nothing, and the Empyema ſtill remaining or increaſing, (becauſe whileſt there is ſtrength it is better to try doubtful Medicines than none) proceed to a Paracenteſis.

Forms of Remedies.

As to the Forms of Medicines requiſite to the curing an Empyema, before Inciſion, the ſame remedies that are preſcribed in a Peripneumonie are convenient; but the Paracenteſis being made, theſe following will be chiefly in uſe.

Againſt fainting of the Spirits, and ſwoonings which happen in that operation, or afterwards,

afterwards, let the following Julep be at hand to be taken now and then about four or five ſpoonfuls.

Take Balm and Black-cherry water, of each ſix ounces, Aq. Mirabilis one ounce, powder of Pearle one dram, ſyrup of Gilliflowers one ounce. Mingle for a Julep. *Cardiacs.*

The following Decoction to be drunk three or four times a day.

Take of Harts-tongue, Speed-well, Agrimony, Colts-foot, Mouſear, Sanicle, of each one handful, Madder and Chervil-roots of each one ounce, Barly half an ounce, red Vicers half an ounce, Raiſins an ounce and half, boyl them in four pound of Spring water to half, ſweeten it with clarified Honey, or with Syrup of Mouſe-ear as you take it, to your pleaſure. If a Feaver be wanting, the following Pills may be taken from one ſcruple to half a dram, Evening and Morning. *A Vulnerary Decoction.*

Take powder of Crabs-eyes two drams, Flower of Sulphur one dram, Sal Prunella half a dram, Spec. Diarrhodon Abbatis one ſcruple, Venice Turpentine waſhed, make a maſs formed into ſmall Pills, or omitting the Turpentine take the powder from half an ounce to two ſcruples, twice in a day.

Examples of perſons ſick of an Empyema are not ſo frequent, and thoſe cured of that Diſtemper more ſeldom. I have known two, unwilling to admit of an Inciſion preſcribed by all means by the Phyſicians, to have fatally expired, and their dead bodyes I have diſſected. Alſo I ſaw that operation adminiſtred to two others, whereof one recovered health, the other dyed conſumptive; but the reaſon thereof was, his Lungs being notably corrupted, and his ſtrength utterly loſt, the too late opening his ſide conferr'd no help to him; but did much depreſs his ſpirits, weak enough before, and waſted his ſtrength. He whoſe ſide was opened, had Lungs ſound enough; but from the Impoſthume of the ſide being broke inwardly, the matter falling into the cavity of the Thorax did ſo compreſs the Diaphragma that he could ſcarcely breathe. The Chirurgeon without a Cauſtick thruſt in his Inciſion-knife between the 6th and 7th Vertebra, and having made a hole quite through his fleſh, he put in his Pipe. A bloody ichor firſt flowed out, afterwards being drawn away by a moderate quantity at times for three dayes, it flowed out without any ſtench; but afterwards as often as the Orifice was opened, a moſt horrid ſmell came forth, exceeding the ſtench of any Jakes, though ne're ſo ſtinking, and infected the whole Chamber with the ill ſcent: Moreover it remain'd ſo for many days, untill by injections made of Myrrh and bitter herbs, boyl'd in Water and Wine, and very often adminiſtred every day, at length it was extinguiſhed; by the daily uſe of which, the morbific matter and at length all the ſordidneſs being waſhed away, all flowing out ceaſed; and laſt of all the Orifice being cloſed, the patient recovered his entire health. I diſſected the dead bodies of thoſe who dyed, when by no perſwaſion of Phyſician or Friends they would admit of the opening of their ſide. One I have ſpoke of otherwhere, the reſult whereof was, the Pus ſtreaming from the Impoſthume raiſed in the Pleura, and in the intercoſtal Muſcles, and broken internally, had waſted part of the affected place, and of the contiguous Lung, with a Sphacelus or Gangrene, and ſo corroding the Diaphragma, and a hole being made on the right ſide thereof, it had deſcended into the Viſcera or bowels of the lower belly: and there in the whole paſſage of the Ventricle and Inteſtines, the outer Coats on which the purulent matter had fallen, appeared eaten and diſcoloured; and at length the purulent matter corroding and boring through the *inteſtinum rectum*, it came forth through the fundament together with his excrement. The ſick man being ſtrong and impatient of any medicine, endured the tyranny hereof for about two months, but in the mean while he lived miſerably, afflicted with a light Feaver, thirſt, inquietude, pain of the ſtomack, and frequent tumbling up and down, and almoſt with continual watchings. His body being opened after his deceaſe, a moſt horrid ſtench, exceeding any Jakes, diffuſed it ſelf throughout the whole Chamber. The Anatomy of another who dyed by an Empyema, afforded not ſo vaſt an effuſion of purulent matter. This indeed had its neſt in his ſide, from whence falling into the cavity of the Thorax, and there accumulated in a vaſt heap, and continually defiling his Lungs drenched therein, it cauſed a flow and as it were a hectick Feaver, whereby the patient, being very old, dyed.

An Hiſtory of one troubled with an Empyema, the cutting of whom was mortal.

Of another who recovered by that remedy.

The Hiſtory of one who dyed becauſe he was not cut.

A fourth Hiſtory like the former.

SECT.

SECT. I. CHAP. XI.

Of an Impoſthume of the Lungs.

Vomica Pulmonis a diſeaſe ſeldom obſerv'd.

A *Vomica* of the Lungs is ſomething a-kin to an Empyema or Peripneumonie, conſidering that the morbific matter is always meer Pus, which notwithſtanding is generated in the Lungs without a Feaver and Phlegmon, yea without any great Cough or Spittle, as it were ſilently, and without noiſe; and frequently this evil doth not diſcover it ſelf before it kills the patient. *Galen* makes mention of this in *lib.* 1. *de locis affectis*; but among Authors who have written Syſtemes and the practical parts of Phyſick, mention thereof is ſeldom or ſcarce to be met with. *Tulpius* in *lib.* 2. *chap.* 10. deſcribes this diſtemper after this ſort. *This evil* (meaning an Impoſthume of the Lungs) *lurks in the beginning ſo ſecretly that it ſcarce diſcovers any ſigns of it ſelf, beſides, in the firſt place, a little dry Cough, and preſently moiſt; which continuing for ſome time, the breath is drawn with difficulty, the ſpirit fails, and the body withers by degrees, although in the mean time the Spittle makes no ſhew either of pus or blood; and if the Impoſthume break by way of ſurpriſal, the man is kill'd immediately.* It is wont ſometimes ſo to happen, but I have known many who in an Impoſthume riſing inſenſibly, being maturated, and at length breaking, have ſpit up great plenty of fetid corruption; and though with voiding daily ſuch a Spittle, for many weeks, nay months, they became very weak, and as it were conſumptive, yet at length by the help of Medicines, after the Ulcer hath been mundified, and dryed, they have recovered their health entirely.

The formal reaſon and conjunct cauſe thereof.

This diſeaſe, if we ſearch into the formal reaſon and conjunct cauſe thereof, is in truth a concourſe of ill humours gathered in ſome part of the Lungs; whoſe matter although it be heterogene and an enemy to nature, notwithſtanding from the beginning appears not ſharp, or irritative. For when at firſt being ſeparated from the blood, it is depoſited in ſome hollow place of the Lungs, perhaps in ſome bladdery cell, it doth neither raiſe a Cough nor produce a Feaver; but afterwards when ſenſibly encreaſed it compreſſes the neighbouring Veſſels bringing blood, and moreover inſinuates into the very blood paſſing by, incongruous Effluviums; from thence a ſmall Feaver ſucceeds, with a certain diſquietude, and feebleneſs; and at length being accumulated to its fulneſs, and maturated by a long digeſtion into mere pus; breaking its neſt very much diſtended before, it flows out every where all about. But if the ways are not open for the iſſuing of the pus, it incontinently mingles it ſelf with the blood, and either empoyſons it, or impedes it from Circulation; or ruſhing by heaps into the Tracheal paſſages, it doth fill moſt of them at once, and ſo ſtuffs them, that a ſufficient entrance is denyed to air to kindle the blood, and preſently the vital flame expires: but if this matter find paſſage, and flow by degrees into the Trachea, from whence again it may be preſently carryed away, and ſpit out, there will be then ſome truce of life, with hope and opportunity of cure. And indeed I have known many cur'd of this diſeaſe.

The morbifick matter.

The uſual matter of an Impoſthume of the Lungs is meer Pus, which often ſtinks notably, and by that differs from the Spittle which is ejected in a Peripneumonie or a Conſumption of the Lungs. But whence that matter proceeds in the beginning thereof, and of what diſpoſition it was before it was ripened into pus, I cannot ſo eaſily determine: becauſe the ſeeds of this diſeaſe being privily ſow'd, and growing up ſecretly, ſpring wholly from an occult original; wherefore its procatarctick or more remote cauſes lye conceal'd, yea while it begins and increaſes, can neither be diſcovered by any pathognomical Signs, nor can any prognoſtick be deviſed, before it diſcovers it ſelf with a mortal ſtroak, but the whole procedure thereof is treacherous.

Now if after the Impoſthume is broke, and the ſpitting up of pus with an eaſie diſcharge being begun, with a conſtancy of ſtrength, there be means offer'd for ſome method of cure, the chief Indications according to the common cuſtom in moſt diſeaſes will be theſe, *viz.* Curatory, preſervatory, and vital. The firſt commands the matter of the Impoſthume ſpeedily to be diſcharg'd by Spittle, and that the ſides thereof ſhould be cleanſed and healed as much as is poſſible. The ſecond Indication

dication provides againſt the conflux of new matter to that neſt, or other adjoyning places of the Lungs (whence a Conſumption may be engendred). The third reſtores the languiſhing of the Spirits, the loſt ſtrength, and the fruſtrated Nouriſhment.

1. As to the firſt Indication, remedies commonly called expectorating, and of them thoſe that are more hot and ſharp, and do very much cleanſe and drye, but eſpecially (for that for the moſt part here a Feaver is wanting) ſulphureous remedies are expedient; which alſo may be preſcribed according to the following forms. *First Indication.*

Forms of Remedies.

Take of Tincture of Sulphur three drams, take from ſeven drops to twenty, at bed-time, and early in the morning in a ſpoonfull of Syrup of the Juice of Ground-Ivie.

Or,

Take our ſyrup of Sulphur, as before ſet down, 6 ounces, let a ſpoonfull be taken at the ſame hours.

Take the dried leaves of Ground-Ivy, Germander, white Maiden-hair, Coltsfoot, Hyſſop, white Hore-hound, Savory, of each one handful, Enula-campane, Orris, and Chervil-roots, of each one ounce, Anniſeeds half an ounce, boyl them in 6 pound of Spring-water to three pound and a half, adding towards the end White-wine 6 ounces, clariſied Honey three ounces. Let the ſtrained Liquor be clarified, and kept for uſe: the doſe 6 ounces warm, three times a day.

Or,

Take of Lime-water 6 pound, put it in a Glaſs with a large mouth, hanging in it the following bag:

Take the dried leaves of Germander, Ground-Ivy, white Horehound, of each one handful, Orris and Enula-campane ſliced one ounce and a half, Anniſeeds bruiſed two ounces, Liquoriſh an ounce and half, Raiſins ſtoned three ounces, let them be ſtope and ſtand cold. Pour out for uſe, the bag remaining.

Take Lohoch Sanum three ounces, Species Diaireos two drams and a half, flower of Sulphur one dram and a half, of ſimple Oxymel two ounces, make a Linctus to be lickt with a Liquoriſh-ſtick.

Take the powder of Hedge-muſtard, Ground-Ivy, of each half an ounce, flower of Sulphur a dram and a half, ſyrup of Sulphur (or of the juice of Ground-Ivy) what will ſuffice to make a Lohoch.

Take of fine Mirrh, of white Amber, of each half an ounce, Sulphur Vivum, Auripigment, of each two drams, the rinds of Piſtaches one dram and a half, make a powder for Fumigation, to be uſed in a Paper-funnel, morning and evening.

2. The preſervatory Indication, aboliſhing the morbific matter, and ſo providing againſt a Phthiſis prone to ſucceed; endeavors the purifying of the blood, and ſtrengthning the Lungs, to which ends, Purgers, Vulnerarie Decoctions, diſtill'd waters and phyſical Drinks, are convenient. *Second Indication.*

Take of the Decoction of Senna of Gereon (with one dram and half of Agarick) three ounces and a half, purging ſyrup of Apples one ounce, Aq. Mirabilis two drams, make a potion to be taken with government once in a week.

The form of the Wound-drink let be the ſame as was preſcribed for an Empyema after opening, or 4 or 6 ounces of the Decoction common in Shops, three times a day, (becauſe here is no feaver.)

Take of Firre-tops 6 M. freſh Ground-Ivy, Hyſſop, Sage, Rockets, Hedge-Muſtard, St. Barbaries *herb or Winter-creſſes, of each four handfuls, the ſeeds of the Sun-flower 6 ounces, ſweet Fennel-ſeeds two ounces, Enula-campane, Orris-roots, of each 3 ounces, being cut and bruiſed, pour upon them 8 pound of* Brunſwick *Mum or Spruce-Beer, diſtill it in a cold Still, let the liquor be all mixt, and when uſed, ſweetned at pleaſure with ſyrup of the juice of Ground-Ivy; the doſe three or four ounces, three times a day.*

Take of the roots of Sarſaparilla ſix ounces, China two ounces, of each of the Sanders ſix drams, Shavings of Ivory and Hartshorn, of each half an ounce, Maſtick-wood one ounce, being cut and bruiſed infuſe them in 12 pound of Spring-water, boyl them to half, adding one ounce of Liquoriſh, Raiſins 4 ounces, let the ſtrained liquor be kept for ordinary drink.

3. The vital Indication preſcribes Cordials, Anodynes, and a convenient courſe of diet. The ſame forms of Medicines for the moſt part are expedient here, which were *Third Indication.*

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preſcrib'd for an Empyema after inciſion, and alſo the ſame diet as was ordain'd in a beginning conſumption; beſides, in this caſe Aſſes-milk often-times doth much good. As to the curing this diſeaſe, I have obſerved, that an Iſſue made in the ſide, for the moſt part doth ſignally profit. I remember two ſuffering under this diſtemper, by coughing up plentifully mere ſtinking Pus or Corruption after the Impoſthume broke, to have been heal'd by this Remedy in a ſhort ſpace of time. The Hiſtories of the Cures ſhall be afterwards annexed. In both theſe by a ſhallow orifice made in the ſide by inciſion, meer Pus began within three or four days to flow out, and then the Spittle began to be abated; and after that flowing, encreaſed from day to day, for ſome time continued, the Spittle altogether ceaſed, and the Patent recovered his entire health.

Fontinels in the ſide very often greatly help in this diſeaſe.

The reaſon of this admirable Effect ſeems to be, that the part affected of the Lungs, or that which is bordering upon it, while the diſeaſe was ariſing, or before, grew to the very ſide, and therefore Nature had endeavoured by this way the thruſting forth of the Pus or matter contained in the Impoſthume; and for that cauſe perhaps had made ſecret paſſages even to the ſuperficies of the ſide; wherefore, afterwards an iſſue being laid open by a knife, the excretion of the morbific matter was conducted thither. It is alſo probable, that a certain part of the Lobe of the Lungs at firſt grew to the ſide in the diſeaſed, and by reaſon of the cleaving thereto, afterwards the Impoſthume had its riſe; for whereas that part being almoſt immoveable, could not be ſtirred like to the other parts of the Lungs, the morbific matter was depoſited there, and was the better able to reſide or form its neſt there.

Although the Impoſthume of the Lungs be thought a very rare diſtemper with ſome Phyſicians, and by *Tulpius* judg'd ſo mortal, that when it breaks it kills out-right; yet I have known many to have labour'd under this diſeaſe, and by the help of Medicines to have recovered their priſtine health. We may here deſcribe two or three of the more remarkable Hiſtories of them.

A Gentleman of a middle age, and before ſtrong and continually healthful, finding himſelf not well, without any apparent cauſe, contracted as it were a crazie diſpoſition; for being without pain, without Vomit, Cough or notable Feaver, in a ſhort time grown weak, he became without any appetite, unapt to ſleep, full of thirſt and hot about the precordia; this perſon was handled a long while by ſome Phyſicians as Scorbutical, and by others as hectical; and after various methods of healing were aſſay'd in vain, at length the diſeaſe ſallying out as from an ambuſh, appeared manifeſtly. For whilſt on a certain night being more unquiet than uſual, he toſſed himſelf very much in his bed, all on a ſudden the Impoſthume breaking in his Lungs, a large quantity of ſtinking pus was thrown out by Cough, ſo that in four or five hours he threw off about two pints. Moreover, after his Cough continuing about two months, he daily ſpit out purulent matter, thick and very ſtinking, untill his fleſh being conſumed, and he wholly ſpent, was reduced to languiſhing, and a notable Conſumption. From the ſtench of his Spittle and breath the whole Chamber was ſo filled, that his Servants or thoſe attending him, could not endure the ill ſcent thereof.

After the Impoſthume was thus broken, I and two other well-known Phyſicians being adviſed with, with all circumſpection we preſcribed Medicines to abſterge and heal the Impoſthume, and to cleanſe the Blood and Lungs, and to redeem him from an imminent Conſumption. *A Tincture, and ſyrup of Sulphur, together with Pectoral and Vulnerary Decoctions and Diſtillations were taken; alſo Lohochs and balſamick Pills, day after day in a conſtant courſe, with Clyſters, gentle Purgatives and Diuretick, were taken between whiles:* then theſe, *Vaporations and Fumigations, as well ſulphureous as arſenical, were uſed morning and evening.* After theſe things being long and carefully uſed did help nothing, I often propounded the opening of the Thorax; but the ſick man obſtinately rejecting this operation, ſaid he would rather dye than be murdered; yet at length, when I aſſured him that this remedy, or none, was further to be attempted, he began to deliberate with himſelf, and immediately baring his breaſt, he ſuffered me to ſearch a place where I might apply a Cauterie; the buſineſs was preſently put out of doubt, for a Tumour appeared on the left ſide of the Sternon, between the 5th and 6th Vertebra. Inſtead of a Cautery, I applyed thereto a ſuppurating Plaiſter, and within three dayes the top of that ſwelling became red and ſoft: out of which, being the next day opened, firſt a thin ichor, and a little after a yellow and concocted pus flowed out, and afterwards it continued daily to ſtream out more plentifully: from

that

that time his ſtinking Spittle began to abate, and within fourteen days it ceaſed quite; the morbific matter obtaining through that orifice both an eaſie and more convenient iſſue. Although by the effect it was manifeſt, that the paſſage of that orifice lay open into the breaſt, and perhaps into the middle of the Lungs, yet no liquor caſt in by a Syringe, could either penetrate or be forced in thither: ſo ſecret and intricate are the conveyances which Nature forms for her laſt aids; that by the ſame paſſage by which the morbific matter is exterminated, nothing more hurtful can enter. This opening of the ſide was at length chang'd into an Iſſue, and a Peaſe or a wooden pill being put in, there came forth daily for half a year together plentifull ichor; and in the mean time this well-known perſon, all corruption of the breaſt being ſhook off, and the fleſhy habit of his body being recovered, became healthful in all reſpects, and laſtly, that iſſue being removed to his arm, he bears no ſign of that nor any other diſeaſe in his breaſt.

After this Cure ſo by chance accompliſhed, it hapned I performed another like it, on purpoſe, not leſs ſucceſſefully; for ſhortly I was ſent for to a noble Lady which had been for many years obnoxious to the heat of the precordia with a Cough. One day, when ſhe coughed ſhe was throughly ſenſible of ſomething broke in her Lungs, and preſently ſhe voided abundance of meer pus, and that ſtinking; after that, this kind of Spittle continuing with a Cough, for a week, notwithſtanding the uſe of remedies, ſeemed rather augmented than diminiſhed, I adviſed to have an Iſſue cut in her ſide, near the very place whence ſhe perceived the pus to aſcend, which ſhe readily granted: Within three days, from the orifice being opened meer pus began to flow out, like that ſhe diſcharged by Cough. Then after the morbific matter had iſſued out by that Fontinel, both the Cough and the ſpitting of pus wholly ceaſed, and within a Fortnight the patient recovered her firm health.

After this I was ſent for to another, *viz.* a ſtrong man, and as ſtrong a drinker; who being affected with an Impoſthume of the Lungs, alſo ſpit up an abundance of pus and very ſtinking matter. This Patient by a certain rude contumacy abhorr'd any iſſue, wherefore he would not ſuffer any to be made in his ſide; notwithſtanding he took any Medicines offered to him, by a long uſe of which Remedies he eſcaped free from that diſeaſe: the Medicines whereby he chiefly received help were prepared of Sulphur, as our Syrup and Tincture, taken daily and very frequently. To theſe for Vehicles were added one while a Decoction, another while a pectoral Hydromel, another while Lime-water, with an infuſion of pectoral, as well as vulnerary Ingredients. Moreover Fumigations and Smokes, eſpecially of ſulphureous and arſenical Ingredients, did contribute very notable help.

SECT. I. CHAP. XII.

Of an Aſthma.

An Aſthma a moſt terrible diſeaſe.

AMong the Diſeaſes whereby the Region of the breaſt is wont to be infeſted, if you regard their tyranny and cruelty, an Aſthma (which ſometimes by reaſon of a peculiar ſymptome is denominated likewiſe an Orthopnœa) doth not deſerve the laſt place; for there is ſcarce any thing more ſharp and terrible than the fits hereof; the organs of breathing, and the precordia themſelves, which are the foundations and Pillars of Life, are ſhaken by this diſeaſe, as by an Earthquake, and ſo totter, that nothing leſs than the ruine of the whole animal Fabrick ſeems to be threatned; for breathing, whereby we chiefly live, is very much hindred by the aſſault of this diſeaſe, and is in danger, or runs the riſque of being quite taken away.

An Aſthma is denominated from ἀσθμαίνω, (which is to breath purſie, or difficultly) and may have this deſcription, that it is a difficult, frequent, and purſie breathing, with a great ſhaking of the breaſt, and for the moſt part without any Feaver.

The cauſes of reſpiration hurt.

The act of breathing depends as well on moving the Lungs, the Structure whereof ought to be of that ſort that its paſſages, and all the pores may perpetually be open, for the free ſucking in and letting out air; as from the parts or organs moving them, which by alternate turns of Syſtole and Diaſtole, do cauſe the hollowneſs of the breaſt, and conſequently the Lungs themſelves to be dilated, and contracted: whereas therefore there are many and divers reaſons of diſturbance, whereby reſpiration is prejudiced, for the moſt part they may all be reduced to theſe two heads; *viz.* that there is a fault either in moving the Lungs, or in the parts or inſtruments that ought to move them, and from hence the differences and kinds of this diſeaſe are beſt of all deſign'd; for according to the various nature and poſition of the morbific cauſe, it is called an Aſthma, either meerly pneumonick, proceeding altogether from the paſſages bringing in aire being obſtructed, or not enough open; or it is meerly convulſive, which only ariſes by reaſon of a defect or fault in the motive organs; or mixt, when either parts conſpire in the fault, which origine every great and inveterate Aſthma is wont to have; of each of theſe we will treat in order.

The Ancients allowed the cauſe of it only from the Bronchia obſtructed:

1. The ancient Phyſicians, and for the moſt part hitherto the Moderns have only acknowledged the firſt kind of Aſthma, judging the next cauſe, and almoſt the only cauſe of this Diſeaſe, to be the ſtraitneſs of the Bronchia, *viz.* inaſmuch as the ſpaces of thoſe paſſages, being either ſtraitned together by obſtruction, or compreſſion, as often as the uſe of breathing is required, do not admit of plenty enough of Aire, wherefore, for the more free inſpiration of aire, as ſhall be needfull, the organs of breathing do moſt difficultly labour, with throes moſt frequently repeated.

Or vapours from the Spleen or Womb, but erroneouſly.

But that ſome are found obnoxious to fits of an Aſthma, without manifeſt taint of the Lungs, it was wont to be aſcribed to vapours from the Spleen, Womb, Meſentery, or ſome other bowel, undeſervedly enough; but ſurely that paſſion, without the ſtraitneſs of the Bronchia, or fault of thoſe bowels we have in another place ſufficiently evidenced to ariſe from Cramps of the moving parts, and ſhall be preſently clearly made out. But in the mean time by what means it may ariſe alſo from the paſſages of the Trachea obſtructed, or compreſſed, it lyes upon me to declare.

After what manner the ſtraitneſs of the Bronchia ariſes.

The ſtraitneſs of the Bronchia, inducing the firſt kind of an Aſthma, is ſuppoſed to come to paſs by an obſtruction, as often as either thick humours and viſcous, or purulent matter or blood extravaſated, are forced in upon them; or that little ſwellings, or Schirrus's, or little Stones, ſtop up their paſſages; or finally that a Catarrh of a ſerous humour ſuddenly diſtills upon them. Moreover the ſame diſtemper is thought to be raiſed by compreſſion, as often as matter of that kind (and of every kind of them) ſhall cleave to the paſſages of the pneumonic Arterie or vein. Surely, an aſthmatical diſpoſition depends upon theſe various cauſes and manners of diſturbance: but all invaſions of the diſeaſe, or at leaſt the greater fits are uſually provoked by reaſon of ſome accidents or occaſions. For while the ſtream of blood ſliding and running down gently can be content with a ſmall breathing, it paſſes through the precordia without great labour either of Lungs or Breaſt. But being boyling and paſſing

paſſing through the Lungs more impetuouſly, it requires a more full inſpiration of aire; for the freer admittance of this through ſtrait paſſages preſently all the breathing organs are alarmed into moſt frequent throes. Whatſoever therefore makes the blood to boyl, or raiſes it into an efferveſcence, as violent motion of the body or minde, exceſs of extern cold or heat, the drinking of Wine, Venery, yea ſometimes mere heat of the Bed doth cauſe aſthmatical aſſaults to ſuch as are prediſpoſed. It is uſual that thoſe who are obnoxious to this diſeaſe oftentimes dare not enter into a Bed, only ſleep in a Chair, or on a bed, being covered with garments. The reaſon whereof is, that the body covered and heated with bed-cloaths, the blood being a little raiſed into a more quick motion, and grown hot, requires a more plentifull ſucking in of air than may be ſupplyed from the paſſages of the Trachea being ſtraitned: for the more blood paſſes the Lungs each Syſtole and Diaſtole, by ſo much, for the enkindling and eventilation thereof, the air ought to be more plentifully and quickly brought in, and ſent forth: to which task (when by reaſon of impediments it is not eaſily diſpatched) yet in ſome manner to be performed, the ultimate endeavors of all the parts appointed for breathing are made uſe of with a great contention of the whole breaſt. Moreover the blood being ſtirr'd, is not only an occaſion, but alſo in ſome part a cauſe in thoſe that are aſthmatically prediſpoſed; for the veſſels bringing blood being thereby more fill'd and diſtended within the lungs, compreſs the Tracheal paſſages being already very ſtrait, and render them much more cloſe.

Whatever cauſes an effurveſcence of the blood is the evident cauſe of an Aſthma.

Why Aſthmatical Perſons are worſt in bed.

II. A convulſive Aſthma (which we judged to be the ſecond kind of this diſeaſe, and to be raiſed without any great obſtruction or compreſſion of the Bronchia, from the mere Cramps of the moving fibres) is not limited to one place, or to any peculiar organ, but being of a diffuſed energy, it is extended to almoſt all the parts employed in breathing (whereof one while this, another while that, or ſome other is in fault.) For a convulſive affection inciting an Aſthmatical invaſion, hath regard to the moving fibres of the veſſels of the Lungs, to the Diaphragma, to the muſcles of the breaſt, to the Nerves, which belong unto the Breaſt, or Lungs, nay to the origine of thoſe Nerves planted within the Brain; and whileſt the morbific matter dwells in every of theſe places, hindering or perverting the work of breathing, it brings on the fits of this Diſeaſe, as in another Tract we have ſomewhile ſince plainly demonſtrated. For the animal Spirits deſtin'd to the function of breathing, if at any time they are very much moleſted and conſtrained into irregular motions, enter inordinately into the Fibres as well nervous as moving of the organs of breathing, and make them for that cauſe one while to be contracted, another while to be diſtended irregularly, as alſo their ſolemn and equal turns of Syſtole and Diaſtole to be variouſly diſturbed or hindered.

A convulſive Aſthma.

Its ſtat manifold and diffuſed.

The morbific cauſe or matter provoking the Spirits prepared for the pneumonic work, as in divers places, ſo chiefly in theſe three, is wont to advance its force or power, *viz.* 1. Either in the muſcular fibres themſelves, or 2. In the branches or nervous ſlips, or laſtly within the Brain by the origine of the Nerves.

The morbific matter conſiſts in ſeveral places.

1. As to the former, the heterogene matter being inimical to the Spirits is ſometimes ſhaken off from the Brain into the trunks of the Nerves, and from thence by their paſſages and ſlips, if perhaps it ſhall be in very little quantity, without very great or ſenſible hurt ſlides down to their lower ends. And when it falls in the nervous fibres, and being heaped up daily, ſhall at length ſenſibly increaſe unto a great quantity, it begins to trouble the inmate Spirits, and to provoke them into aſthmatical Convulſions; which forthwith infeſt, and are encreaſed by reaſon of evident cauſes, neither do they utterly ceaſe, untill the ſtock of matter ſo accumulated, be wholly diſpers'd, and conſumed; afterwards when it being renewed ariſes to a fulneſs, the fits of that diſeaſe return, and are for that cauſe moſt frequently periodical, as is manifeſt to common obſervation. According to this account we do deſervedly ſuſpect the cauſe of a convulſive aſthma ſometimes to lurk in the muſcular coats of the pneumonick veſſels, alſo ſometimes in the fibres of the Diaphragma, or the Proceſſes thereof towards the loyns. It is not very probable that the neſt of this diſeaſe conſiſts within the fibres of this or that pectoral muſcle, although in Scorbutical perſons from theſe alſo poſſeſſed with a convulſive matter, we have known pains to have riſen with breathing being hurt.

1. In the muſcular fibres.

2. But truly (even as in another place we have not only demonſtrated by reaſon, but by the obſervations and Hiſtories of the ſick) a convulſive aſthma is often incurred, as often as the morbific matter ſliding down into the pneumonic Nerves, ſticks in

2. Within the Nerves and their enfoldings.

ſome place within their paſſages, and eſpecially about their foldings: whence as often as it is accumulated to a plenitude it begins to be mov'd and ſhaken; wherefore the ſpirits lying lurking, and flowing into the organs of breathing diſturbed, are forced into irregularity, and thoſe ſpirits preſently affect other innates of the fibres of the Lungs and breaſt, and provoke them into unequal and aſthmatical convulſions. For this cauſe and the reaſon of the diſturbance, we have declared that not only invaſions of this diſeaſe, but alſo the precordia being diſturb'd thereby the Cardiack paſſions do ariſe.

3. Near the Origines of the Nerves.

3. We have clearly unfolded by anatomical obſervations that the cauſe of a convulſive Aſthma ſometimes conſiſts in the hinder part of the head near the origines of the nerves. Surely I have obſerv'd ſome patients, who when, lying ſick of other deſperate diſeaſes, they were alſo aſthmatick, found it neceſſary to be whether in bed or chair with their head always erect, or looking down, but lying on their back or leaning backwards incontinently they gaped for breath as if they were dying, and hardly breathed; the cauſe whereof (as appear'd by diſſection after they were dead) was only a huge collection of ſharp Serum which was gather'd within the cavities of the brain; which, if by reaſon of the head inclining backwards, it fell into the origine of the Nerves of the eighth pair, preſently the precordia, and chiefly the breathing organs were affected with horrid cramps. Moreover ſometimes for this very reaſon it ſeems that Orthopnoick perſons cannot lie down in their bed without danger of choaking, but are conſtrain'd to ſit up with an erect body.

3. A mixt Aſthma or partly Pneumonic and partly Convulſive.

III. Although an Aſthma is ſometimes ſimple from the beginning, *viz.* either merely pneumonical, or convulſive, notwithſtanding after either diſeaſe hath for ſome time encreaſed, for the moſt part it gains the other to it ſelf: hence it may be concluded every inveterate Aſthma to be a mixt affection, ſtirr'd up by the default partly of the Lungs ill fram'd, and partly by default of the Nerves and nervous fibres appertaining to the breathing parts. For when the pneumonic paſſages being ſtraitned or obſtructed from ſome cauſe, do not admit of a free ſucking in, and breathing out of the air, for that cauſe alſo the blood, yea and nervous humour, being hindred in their courſes, and compell'd to proceed ſlowly and to ſtagnate, do faſten their feculency and dregs upon the nervous parts; whence the paſſages of the ſpirits are obſtructed, or perverted, and at length a convulſive taint accrues to them. Moreover the blood, being not duly inſpir'd and eventilated within the precordia, at length being vitiated in its temperament ſupplies the brain and nervous ſtock but with a depraved juice, whoſe faults do chiefly puniſh the organs of reſpiration before hurt and debilitated. In like manner alſo the evil is reciprocrated on the contrary part, as oft as this diſeaſe begins by fault of the nervous ſtock; for as much as the motion of the Lungs is often ſtopt or hindered, by reaſon of Convulſions in the muſcular fibres, both the blood and the nervous juice being reſtrain'd from their uſual motions, do heap up dregs and filths, faſtening them to the parts containing them, by which not only viſcous humours and obſtructing of the paſſages, but even Tumours and other more ſolid concretes vitiating the ſtructure of the Lungs, are produced.

The cauſes of an Aſthma recited.

Therefore if when an Aſthma being for ſome time confirmed and become habitual, ſhall attain to frequent fits, and thoſe emergent upon every occaſion; the conjunct cauſe thereof, and alſo the procuring cauſe is placed as well inwardly in the lung it ſelf, as outwardly in the Fibres and Nerves, and in the ſpirits imploy'd for the function of breathing. Neither will it be difficult, by ſeeking diligently each of theſe things, to find in any caſe of the patient, as well the chief neſts, as nouriſhment of this morbifick matter. But as to the evident cauſes they are very many, and alſo of diverſe ſorts. For hitherto ought to be referred whatſoever move, either the blood and the other humours, or trouble the animal ſpirits and force them into irregularities. Aſthmatical perſons can indure nothing violent, or unaccuſtomed: from exceſs of cold, or heat, from any vehement motion of body or mind, by any great change of air, or of the year, or from the ſlighteſt errors about the things not natural, yea from a thouſand other occaſions they fall into fits of difficult breathing.

The Prognoſticks of the Diſeaſe.

As to the prognoſtick part, an inveterate Aſthma is difficulty or ſcarce ever cured; notwithſtanding the medicines and method of healing being rightly ordered, oftentimes great ſuccour is afforded, *viz.* the fierceneſs of the fits is diminiſh'd, longer reſpites are procured, yea, even the dangers of life it ſelf, ſeeming frequently to be imminent are removed.

This diſeaſe growing worſe, either threatens a Conſumption, or a Dropſie, or ſome drowzy,

drowzy, or convulſive affect; accordingly as the Serum by reaſon of perſpiration being hindred, being more abundantly accumulated (becauſe the ſick cannot ſleep enough in their beds) it is either fixed in the lungs, or transfer'd into the habit of the body, or into the brain it ſelf. For this very reaſon the diſeaſed do find themſelves better in Summer, when they breath more freely, than in Winter; likewiſe better in hot countries than in cold, the South or Weſt wind blowing, than the North or Eaſt.

Of the curatory method of an Aſthma there will be two chief indications, or rather ſo many diſtinct methods of healing, *viz.* Curatory and preſervatory. The firſt inſtructs what is to be perform'd in the fit it ſelf, that the Patient may be delivered from preſent danger; the other, by what out of the fit, we ought to endeavour the taking away the morbifick cauſe, leſt that diſtemper be repeated more often, or more heavily. *Two chief Indications.*

1. Therefore a fit urging, there will be two chief intentions of curing, *viz.* firſt, that a more free breathing be procured, as well upon the account of air, as of the Lungs, at leaſt ſo far, as may ſuffice to ſupport life; and ſecondly, that the organs of breathing may be withdrawn, and reſtrain'd, as ſoon as may be, from the Convulſions begun, and uſually obſtinately continuing. *What is to be done in the fit.*

1. As to what reſpects the former, let the Patient be placed in an upright poſition of body, in a more open place, and pretty airy, free from Smoak and breath of by-ſtanders; then let it be indeavoured that the Lungs, being made free from all obſtruction, and inward oppreſſion, and alſo external compreſſion, may be able to draw and change the breath more eaſily. For theſe purpoſes leſt the bulk of the nether bowels compreſs or ſtraiten the precordia, the belly is to be looſen'd by a Clyſter, the apparel and what ever binds about the Breaſt to be looſened; alſo when in this caſe either from the blood ſwelling up inordinately within the Pneumonic veſſels, or from the Serum diſtilling out of the Arteries and Glandules into the tracheal paſſages, they are wont to be oppreſſed, the impetuoſity and inſtigations of either humour ought to be reſtraind and appeaſed; inſomuch that if ſtrength endure, and the pulſe be ſtrong enough, Phlebotomy is oftentimes convenient. Moreover thoſe things are carefully to be adminiſtred which diſpatch away the Serum and ſuperfluities of the boiling blood by urine, as well as ſweatings: to which intention, Juleps, Apozemes, commonly call'd Pectorals, do notably conduce; yea, powders of ſhells, millepedes prepared, Spirits and volatile ſalts, are ſucceſsfully uſed. In the mean time beſides let there be adminiſtred whatſoever opens and makes ſlippery the paſſages of the Trachea, and moves expectoration, and whatſoever, if need be, gives ſtop to a Catarrh diſtilling upon the fame; for which purpoſes, Lambitives, Lohochs, pectoral Decoctions and ſuffumigations are good. *1 Intention to facilitate breathing.*

2. As to the other intention of curing in theſe Convulſive fits, *viz.* that the organs of breathing may be reſtrained from the Convulſions begun, and may quietly return to their ordinary task, (unleſs this ſucceeds of its own accord, after the boiling of the blood and Serum in the Lungs be appeaſed) we muſt uſe Antiſpaſmaticks or remedies againſt Convulſions, and Anodynes: for medicines which are uſed to be adminiſtred in hyſterical paſſions, do conduce in a convulſive Aſthma. *2 Intention to free from Convulſions the moving parts. Remedies which diſſipate the ſpirits proſit for this end.*

Spirit of Harts-horn, of ſoot, and eſpecially of ſal Armoniac diſtill'd with gum Ammoniacum; alſo the tinctures of gum Ammoniacum, of Sulphur, of Caſtor, of Aſa fetida, Syrups of Ammoniacum, Sulphur; Oxymel of ſquils and ſuch like, which becauſe they are of an ingrateful taſt or ſmell, as it were diſſipate the ſpirits and withdraw them from tumults, do ſometimes help notably. But if the ſpirits being outragious cannot by this means be appeaſed, we muſt aſſay Narcotics, that ſome of them being ſubdued the others may be reduced to order: for ſurely unleſs a ſtuffing up of the Lungs, with a great oppreſſion of the Precordia do hinder, Opiates do ſometimes greatly profit. In the dreadful fits of this diſeaſe, when other medicines had effected leſs, I have often adminiſtred ſucceſsfully Diacodium, as alſo Laudanum Tartariz'd. But theſe may not be exhibited without great circumſpection, becauſe whereas more or leſs they hinder breathing (which already is difficult and too much hindred) they frequently bring the Patient into danger of life. Beſides this, that the Pneumonic ſpirits may be diverted from their Convulſions, it is many times expedient to moleſt the ſpirits in other places; for ſome of the ſpirits being in other places afflicted moſt commonly the reſidue as well as thoſe that are ſmitten do diſmiſs their irregularities: Wherefore Veſicatories, Cupping-glaſſes, ligatures, and painful frictions bring help; *Or do bring them aſleep.*

help; alſo for this reaſon vomits are ſucceſsfully taken in the midſt of a fit. The ſcope of healing being now deſign'd, after what manner the patients in an urging fit of an Aſthma ought to be handled, it yet remains for us to propound ſome more ſelect forms of Remedies appropriated to the ſame ends.

Forms of Remedies. In the firſt place therefore to give a ſtop to the flux of blood and ſerum, and to diſmiſs their ſuperfluities deriv'd from the Lungs by ſweat and urine, theſe enſuing are preſcrib'd.

Take the water of ground-Ivy eight ounces, of Rue, Pennyroyal, Dragons, of each two ounces, of ſal prunella one dram and a half, Syrup Byzantinus, red Poppies of each one ounce; make a Julep, take it three or more times in a day, the doſe three or four ounces.

An Apozeme. *Take graſs roots three ounces, roots of Kneeholm two ounces, candi'd Enula campane one ounce and a half, barly half an ounce, Raiſons of the Sun, one ounce, boyle them in three pound of water to two pound, adding to your ſtrain'd liquor ſal prunella one dram and a half; ſweeten it, if there be occaſion, with Syrup Byzantinus or of Violets.*

A Tincture. *Take tincture of Sulphur three drams, the Doſe ſix drops to ten, evening and morning in a ſpoonful of Syrup of the juice of ground-Ivy, or Violets.*

Take of facula of Aron and Briony, of each one dram and a half, flower of Sulphur one dram, flowers of Benzoin half a dram, Suger-candy half an ounce, Liquoriſh two drams; make a powder to be taken to half a dram or two ſcruples twice in a day with the former Julep or Apozeme: or,

A Powder. *Take of the powder preſcribed two ounces, hony or Oxymel what will ſuffice, make a Linctus, take about half a ſpoonful evening, and morning, and at other times lick it with a ſtick of Liquoriſh.*

Take Syrup of Horehound, of Garlick of each one ounce and a half, tincture of Saffron, Caſtor, of each two drams mix them, take a ſmall ſpoonful in the fits.

Mixtures. *Take of ſpirit of ſal Armoniack with gum Ammoniacum three drams, of ſnail water, and of Earth-worms of each three ounces, Syrup of Horehound two ounces, mingle them, take by a ſpoonful once in four or five hours.*

Take of the powder of Hedge muſtard, or of ground Ivy gather'd in the heat of the Sun one ounce, of Oxymel ſimple enough to make a Linctus.

2 The Indication preſervatory propoſes what is to be done out of the fit. 2. So much concerning the method, and medicines requiſite in the fit of an Aſthma. The other indication preſervatory deſigning the taking away of the whole procuring cauſes and the morbific matter, contains two parts or diſtinct ſcopes of cure: both which for the moſt part are wont in the practice to be complicated and adminiſtred together. One of theſe endeavours to amend the conſormation of the Lungs, if it be any way hurt or faulty, and the other to take off the irregularities of the moving parts and ſpirits, appointed for them. We ſhall beſt anſwer both theſe intentions if the remedies vulgarly call'd pectorals, are mixt with anticonvulſives, and the uſe of theſe with other medicines reſpecting the preparation of the whole body and emergent ſymptomes be apply'd between whiles. For which purpoſes the method and enſuing forms of remedies may be adminiſtred.

Suggeſts two Intentions of healing.

Forms of Remedies.

Take of Aloes roſata a dram and half, flower of Sulphur a dram, ſalt of Amber half a dram, Tar what will ſuffice, make 24 pills, take 4 every, or every other, or every third night. or,

Pills. *Take of gum Ammoniacum, Bdellium diſſolv'd in vinegar of ſquils of each half an ounce, flower of Brimſtone three drams, powder of hedge muſtard and ſavory of each half a dram, make a maſs with Syrup of Sulphur or Oxymel of ſquils; make ſmall pills, take 3 every evening. or,*

Take Hog-lice prepar'd two drams, flower of Benzoin half a dram, ſalt of Amber two ſcruples, extract of Enula campane half a dram, Caſtor half a dram, Saffron a ſcruple, Venice Turpentine enough to make a maſs, form ſmall pills, take 4 every evening and morning except the times of purging.

But if this form of Pills will not pleaſe, or the above mentioned Medicines profit little, afterwards the enſuing ſhall be eſſay'd to free the Lungs from obſtruction.

Take

Take ſpirit of gum Ammoniacum diſtilled with ſal Armoniac three drams, the ſyrup of Ground-Ivy three ounces, magiſtral Snail and Earth-worm water of each an ounce, tincture of Saffron two drams, mingle them and take a ſpoonful evening and morning. Or, Mixtures.

Take Tincture of Ammoniacum three drams, the doſe from 15 to 20 drops in a ſpoonful of Oxymel, or of ſyrup of Ground-Ivy. Or,

Take Tincture of Sulphur three drams, doſe from 7 drops to 12 or 20 in a convenient vehicle at the ſame hours.

In like manner other ſpirits endued with a volatile ſalt, and mixt with pectoral Syrups and Cephalick waters, may be preſcribed ſucceſsfully evening and morning.

In place of a mixture or an Aſthmathical Julep from diſtill'd-waters in the ſhops, let this following magiſtral be prepared for frequent and ſeveral uſes.

Take roots of Enula campane, Orris of Florence, *Angelica, Maſterwort, of each four ounces, of Bryony a pound, the leaves of white Hore-hound, Hyſop, of Savory, Pennyroyal, Ground-Ivy of each four handfuls, Juniper and Ivy-berries of each a pound, Bay-berries half a pound, ſweet Fennel, Carue, Annis, Louvage, Dill ſeeds of each an ounce, Cubebs two ounces, Long-pepper, Cloves, and Mace of each an ounce, all being ſliced and bruiſed pour on them eight pound of* Brunswick *beer, diſtil it in common organs, mix the whole, and as you uſe it ſweeten it with Sugar, or Syrup of Ground-Ivy, or with Oxymel.* A diſtill'd water.

Moreover in lieu of Oxymel, or any common pectoral Syrups, the enſuing forms of medicines appropriated to an Aſthma are preſcribed; and in the firſt place the Syrup of Enula-campane invented by *Horatius Augenius* and called by his name, and afterwards commended by *Platerus, Sennertus, Riverius* and other renowned Practitioners, ought to be obſerved in this place, and uſed frequently.

Take of Enula-campane, Polypodie of the Oak prepared of each two ounces, Currance two ounces, Sebeſtens 15, Coltsfoot, Lungwort, Savory, Calaminth, of each a handful, a large leaf of Tabaco, Liquoriſh two drams, Nettle and Silk-worm ſeeds of each a dram and a half, boyl them in Wine mingled with Hony and diluted to a pound and half, and with a little Sugar make a Syrup: take it by it ſelf in form of a Linctus, or a ſpoonful evening and morning, or add a ſpoonfull to the diſtilled water or Apozeme. Magiſtral Syrups.

Take Florence *Orris-roots, Enula campane of each half an ounce, Garlick peel'd four drams, Cloves two drams, white Benzoin a dram and half, Saffron a ſcruple, ſlice and bruiſe them and digeſt them warm in a pound of rectified ſpirit of Wine for 48 hours; to it ſtrained add fine Sugar a pound, put it in a Silver Baſon upon live coals, ſtirring it till it flame, and let it burn as long as it will, then the flame being out make a Syrup of it to be taken as the former.*

Moreover hither may be referred the decoction of an old Cock ſo much magnified by renouned Phyſicians as well antient as modern, for the cure of an Aſthma; which although *Septalius* damn'd for groſs and of no efficacy, notwithſtanding *Riverius* after him vindicates; and to atteſt the efficacy of this remedy oppoſes his own experience to the others. Theſe broths are of two kinds, *viz.* either with or without purgers; and various Recipes of each do remain in practical Authors, all which would be tedious to recount here, we ſhall propoſe one or two forms. The decoction of an old Cock.

This is the common example without purgers.

Take of Orris and Enula-campane-roots of each half an ounce, Hyſop and Hore-hound dryed of each ſix drams, Carthamus ſeeds an ounce, Annis and Dill ſeeds of each two drams, Liquoriſh ſcraped and Raiſins ſtoned of each three drams; let them be prepared and ſewed into the belly of an old Cock, which boyl in fifteen pound of water until the fleſh depart from the bones, ſtrain it and let it ſettle: of the clear liquor the doſe ſix ounces, with an ounce of Oxymel ſimple. Or if the remedy be deſired to be ſolutive, diſſolve of freſh Caſſia and Manna of each half an ounce in each draught, taken for many days together, and ſometimes for a whole month. Without purgers.

Riverius preſcribes a convenient form of ſuch a kind of purging broth.

Take

Take Enula-campane and Orris roots of each a dram and a half, Hyſop and Coltsfoot of each a handful, Liquoriſh and Raiſins of each two drams, Figgs 4, Senna cleanſed three drams, polypodie of the Oak and Carthamus ſeeds of each half an ounce, Anniſeeds a dram and a half, boyl them with the third or fourth part of an old cock, make broth for one doſe to be taken in the morning, let them continue it for twelve or fifteen days.

The firſt Hiſtory of a convulſive Aſthma.

Of many examples of Aſthmaticks I ſhall propound only two ſingular ones, *viz.* I will deſcribe the Hiſtory of one who hath been obnoxious to fits of this diſeaſe meerly convulſive, and of another partly convulſive and partly Pneumonic. A Noble perſon, proper and well ſet, and formerly healthful enough, after that by chance he had ſtruck his ſide againſt ſome ſolid body, from that time contracted a hurt, and afterwards an Aſthmatical taint. For we may ſuſpect, a certain folding of the Nerves belonging to the precordia placed near was prejudiced by that accident, and from ſuch a cauſe afterwards this diſtemper derived its origine, *viz.* at ſome incertain times the pain at firſt troubled him about that place, and preſently a moſt painful Dyſpnœa enſued with a laborious and laſting contention of all the breathing parts; inſomuch that while the fit laſted the patient was thought to be in the agonie of death. I was firſt ſent for to him after labouring for two days with ſuch an invaſion of the Aſthma that he was accounted in a deſperate condition; Notwithſtanding finding his Lungs without hurt, our prognoſtic willed as yet to hope well, and immediately by a conſultation of other Phyſicians it was preſcribed as followeth.

The Cure.

Take of ſpirit of gum Ammoniacum diſtill'd with ſalt of Tartar three drams, take from 15 to 20 drops in a ſpoonful of the following Julep, drinking after it five ſpoonfuls, repeat it every ſixth hour.

Take elder flower, camomile, and Penyroyal water of each four ounces, Snail-water two ounces, Sugar one ounce, mingle them, between whiles he took a doſe of the following powder with the ſame Julep or pectoral decoction.

Take powder of Crabs eyes two drams, ſal prunella a dram and a half, ſalt of Amber half a dram, mix them, divide it into eight doſes.

Large veſicatories were applied on the inſide of his arms near the arm-pits, Clyſters daily adminiſtred, and frequent frictions. By the uſe of theſe he received ſudden and unexpected help, and within a few days became wholly free from that fit. Afterwards as often as he had any perception of the firſt motions of this diſeaſe, preſently he took a large doſe of that ſpirit with the ſame Julep 3 or 4 times a day, by which remedy often uſed, one while for preſervation, another while for the cure ſake, he was void of any outragious invaſion from his habitual Aſthma for above two years, in the mean while ſuffering ſome more light aſſaults but eaſily blown off.

The ſecond Hiſtory of a mixt diſeaſe.

A very Honourable old Gentleman dignified by many great Titles, himſelf being greater than all them, after that for ſome years he had liv'd every winter obnoxious to a cough and a moderate ſpitting, and gentle enough, at the end of the laſt Autumn returning from a long journey he was leſs healthful: (as it was thought by cold he had taken) for he complained of a pain in the middle of his breaſt next the ſternon, which growing worſe in an evening, as ſoon as warm in his bed, wholly diſturbed his ſleep, and moſt part of the night was very troubleſome: notwithſtanding without any Dyſpnea or evident ſign of an Aſthma. To take away this pain both Purging and Bleeding were uſed, pectorals and antiſcorbuticks were daily uſed, liniments and fomentations were applied to the place pained, yet without any great ſucceſs or eaſe: for the alteration which happened afterwards declined rather to worſe; for a difficult and obſtructed breath came upon the pain's growing a little more remiſs, ſo that from his firſt ſleep, or inclination thereto he became aſthmatical and gaping for breath, and ſuffering about the precordia he was conſtrained to ſit upright in his bed. Moreover a dyſpnœa of this kind and a convulſive agitation of the breathing parts did not only return every evening, but from day to day were rendred more outragious and laſted a longer time; inſomuch that one night waking from his ſleep, for many hours he was aſſaulted with a moſt painful fit of an Aſthma which had almoſt kill'd him. The Phyſicians being at a great diſtance from him, although deſired about midnight came not while the morning following, mean while by reaſon of bleeding uſed by a Barber this worthy Gentleman revived, being redeemed from the jaws

of

of death; but afterwards by the conſultations of Phyſitians that day a ſlender diet and looſening the belly by a Clyſter were preſcribed: In the evening and early in the morning he took of Spirit of gum Ammoniac diſtilled with ſal Armoniac 12 drops in a proper vehicle, and continued the uſe for many days after; Veſicatories were applyed on the inſide of his arms near the armpits; moreover Juleps and pectoral Decoctions, Lohochs, Clyſters, and alſo mild Purges were taken by turns; alſo Phlebotomie was repeated after two days. Whereas formerly he was uſed to drink for his mornings draught a pint of Ale with Wormwood and Scurvy-graſs, in the room of that about eight a clock he took 15 drops of Elixir Proprietatis tartariz'd in a draught of Coffee made with Sage. By theſe remedies his aſthmatical fits preſently abated of their fierceneſs, inſomuch that the beginning and end of every night were quiet enough, but in the middle light troubles about the precordia kept him from ſleep, ſitting upright an hour or two. Certain other medicines were propounded by the Phyſitians, and others of diverſe ſorts privately offered by his friends, which notwithſtanding the Honourable Perſon utterly rejected, or ſoon loath'd; and that the rather, becauſe, winter then being almoſt ſpent, his reſtauration was hoped for by the coming on of the Spring and enjoyment of the Country air without the help of much Phyſick. Wherefore of the medicines above mentioned he uſed one while this and another while that a little by turns, and ſometimes kept holy-day from them all; but in the interim although his aſthmatical invaſions little or nothing troubled him as formerly in the night, yet by reaſon his Lungs were very much obſtructed, and a ſerous humour fallen down into his feet, he was not able to walk faſt or aſcend ſteep places, without a painful dyſpnœa, being in danger of choaking; and now (while I am writing this) not ſo much an Aſthma or Conſumption, as a Dropſie is feared.

The reaſon of this caſe.

The Ætiologie of this caſe is clearly enough manifeſt from the above-mentioned things, *viz.* one procuring cauſe of this Aſthma was a lung greatly obſtructed, inſomuch, that whereas the blood boiling, paſſed through the precordia more impetuouſly, the air requiſite for its ventilation could not be admitted in plenty enough; wherefore to ſupply this defect there was neceſſity that the Lungs and their motive organs ſhould be provoked into more frequent, and more vehement throes. Afterwards from thence enſued a convulſive diſpoſition of the fibres moving the breaſt: for the heterogeneous matter deſcending into thoſe parts together with the nervous juice, and being gathered to a plenitude, firſt excited pain and afterwards fierce and periodical convulſions in the pneumonic organs: and now although this latter diſpoſition ceaſe (becauſe the Elaſtick and ſpaſmodical matter is blunted or extinguiſhed by the ſerous illuvies) yet the other procuring cauſe ſtill remains, and hath got another aſſociate, *viz.* a worſe Devil than it ſelf, to wit a Dropſie.

SECT. I. CHAP. XIII.

Of a Dropſie of the Breaſt.

A Dropſie of the Breaſt is eaſily known.

IT is clearly manifeſt by certain and manifold diſcoveries, that the Region of the Breaſt is ſometimes affected with a Dropſie; for the ſenſe and ſound of water fluctuating, do moſt evidently demonſtrate it in living bodies; and Anatomical inſpection in the defunct. But yet concerning the cauſe of this Diſeaſe, and manner of coming to paſs, to wit, by what ways, and after what manner diſpoſed, the accumulation of water firſt begins within the hollow of the breaſt, as alſo how it is ſenſibly augmented, and frequently inſenſibly continued untill the Diſeaſe becomes deſperate, is a thing yet in the dark. Whenas there is a general diſtemper of a Dropſie or an Anaſarca appearing, and hath ſeized on the fleſh and cavities of the bowels every where, or in moſt places, we are not to admire if that illuvies of waters ſeize alſo upon the Pectorals: But beſides, ſometimes it happens, that the Region of the Thorax, is either firſt or only overflown, the other parts in the mean time remaining ſound enough, or only hurt ſecondarily.

Its cauſe is hidden.

About the origine of this Diſeaſe, and the manner of generation it is much diſputed whence, and by what paſſages that illuvies of water being found every where in the hollowneſs of the Thorax, doth come thither. Some Authors do derive it from above, *viz.* that it deſcends from the head by the Trachea; and others deducing its Spring from beneath, from the cavity of the Abdomen, alſo ſometimes from the Liver and Spleen, by I know not what blind ways, judge thoſe waters to be conveyed into the hollowneſs of the Breaſt. But neither of theſe Opinions challenge our aſſent, or deſerve our arguments to diſprove them: for none conſidering the paſſage of the blood and humours will acknowledge either this or that way of commerce. We cannot but affirm, that the ſerous humour, raiſing a Dropſie of the breaſt, does arrive thither either in a kind of vapour, which being exhal'd from the Precordia and ſides of the Thorax, is eaſily condenſed into water; or ſecondly, that the Serum is there depoſited under its own proper form, inaſmuch as it flows into that cavity from the mouths of the Veſſels, *i. e.* of the Arteries being open. We will anon enquire whether the Lymphaducts or veſſels bringing chyle, being any where open, or broke, do ſometimes produce that diſeaſe.

How many wayes it may be producted.

1. By Vapours condenſed there.

1. As to the former, it is ſo very probable that a Dropſie of the breaſt takes ſometimes its origine from vapours condenſed within its cavity, that it is a wonder how it ſhould be otherwiſe at any time, or that any ſhould live exempt from ſuch an effect. For how much is there of vapour that ſeparates from the boyling blood? and when it waxes cold in the precordia, how can it come otherwiſe to paſs but that the abundant vapour ſhould be condenſed in this encloſure into water, even as if ſhut within a Still? And truly it will not be eaſie to determine, when the vaporous ſteams are ſo unceſſantly heaped within the cavity of the breaſt, what may become of them, how they are conſumed, or from thence diſcharged abroad. Surely we muſt affirm, they either penetrate the ſides of the Thorax, or (which rather ſeems to be) they inſinuate into the pores of the Lungs, and ſo fly away in breathing. Certainly by either way, the vapours of the breaſt may exhale: and perhaps if either be defective, or hindred, by that means a Dropſie of the Breaſt may be cauſed.

2. By Serum depoſited there.

2. But moreover, I am apt to think, that this Diſeaſe alſo ſometimes happens in another manner (inaſmuch as the Serum diſtills from the veſſels in its proper form.) For in a cacochymical conſtitution of body, or a perſon very ſcorbutical, where the watery and weak blood every where caſts off its ſuperfluous Serum from its own conſiſtence, and every where ejecting it from the little mouths of the Arteries being looſed and open, excludes it from the clew of circulation, nothing is more uſual, than for the cavities not only of the Bowels, but alſo of the Precordia, yea the Brain it ſelf, to be overflown with that watery collection; moreover in ſo general a diſpoſition to a Dropſie, that one while this region, another while that, or another ſhould be firſt and almoſt onely poſſeſs'd; and that alſo ſometimes the inmoſt parts being untoucht,

Which ſometimes breaks out from the Arteries.

the

the outward fleſh, *viz.* the muſcles and their interſpaces are overflown with that ſerous illuvies.

3. Among the veſſels that pour in the dropſical matter into the cavity of the breaſt, the Lymphaducts and parts bringing the chyle, do juſtly fall under a ſuſpicion. What relates to the former, it appears by anatomical inſpection, that a great company of theſe do creep thorough the whole Lungs, and do tend from their outer parts, ſtretching out themſelves inwards towards the paſſages of the breaſt, and for the moſt part pour out into them their liquour, which being ſuperfluous, they every where ſuck up from the arterious Blood. Therefore whenas theſe veſſels are obſtructed, or are by any means impeded from diſcharging their function, it muſt needs be that a heap of water be accumulated in the Lungs, which afterwards falling into the cavity of the breaſt, will excite a Dropſie in that region. For in truth, this Lympha reſtagnating within the conſiſtence of the Lungs, it often happens that the little bladders called Hydatides, in the outer ſuperficies of the Viſcera are raiſed up, which afterwards being broke, diſcharging the waters into the cavities of the Thorax, they produce there an Aſcites. A diſtemper of this kinde is often diſcovered in Sheep, when they dye by heaps of a Dropſie, by reaſon of a moiſt ſeaſon and watery paſture. And ſurely the following Hiſtory doth clearly ſeem to argue, that the Aſcites of the breaſt proceeds from the like cauſe ſometimes in a man, (there being yet a living example of this diſeaſe.) Lately a young man healthful enough and ſtrong, having accuſtomed himſelf to hunting and inſatiable riding, and other exerciſes of the body very immoderate, a while without detriment, at length he perceived a fulneſs in his Thorax as if it were a kind of ſwelling; inſomuch that the left ſide of his Lungs ſeem'd to begin to ſwell, and his heart to be thruſt out of its place towards the right ſide; for that he perceived the pulſation thereof to be on that part chiefly. After he had been for ſome time in this condition, on a certain day he felt as if a Veſſel had been burſt aſunder within the cavity of the Thorax, and from thence for the ſpace of half an hour, in that place, as it were the dropping of a humour falling from above into the bottome of his breaſt, was not only felt by himſelf, but could be heard alſo by the ſtanders by. *A*lthough he was at firſt ſurprized with the rarity of this affect, yet for that he was well enough as to ſtrength, appetite, ſleep, and other natural functions, immediately after he became ſecure, and negligent of Medicines; But afterwards by any motion, bending or ſtirring of his Body, a fluctuation of water gathered within on his left ſide, was felt by him; moreover, the motion and ſound was evidently perceived by others, either by handling, or by the ear. *A*s without doubt this Gentleman was affected with a Dropſie of the Breaſt, ſo it ſeemed moſt probable that the diſeaſe had its original from thence, in regard the lymphaducts relating to the left ſide of the lungs, being firſt obſtructed near their inſertions into the paſſage bringing the chyle, did ſwell up to a great bulk, and afterwards being broken diſtill'd their humour into the cavity of the Thorax.

3. And ſometimes from the Lymphaducts.

A remarkable hiſtory of the like caſe.

When now an Inundation of the Precordia, and ſo of the vital Fort, was imminent, this Gentleman at length, thinking it time to provide for himſelf, entered into a courſe of Phyſick, and carryed certain Medicines into the Countrey for his cure, yet without any ſignal ſucceſs. Afterwards coming to *London*, he firſt conſulted the worthy Dr. *Lower*, being of his former acquaintance. He propoſing the opening of the Thorax for his only remedy, took care that the worthy Dr. *Micklethwait* and my ſelf ſhould be ſent for to the conſultation. Immediately an inciſion was appointed by the conſent of us all: wherefore, after proviſion for the whole being made, a Chirurgeon applyed a Cautery between the ſixth and ſeventh Vertebra, and the next day he put his Pipe into the Orifice cut into the cavity of his Breaſt; which being done, immediately a thick liquor whitiſh like Chyle, and as it were milkie, flowed out. There was about ſix ounces only taken from him the firſt time, and the next day as much more. The third day when a little greater quantity was ſuffered to come out, being affected immediately with great fainting, and afterwards being feaveriſh, he was ill for a day or two. Wherefore it ſeemed good to ſtop the iſſue of that matter till he recovered his temperament and ſtrength: but afterwards a ſparing evacuation of the ſame matter being daily made, the cavity of his breaſt was wholly emptyed: but as yet he wears a pipe in the orifice with a tap, which being opened once in a day and a nights ſpace, a very little of the humour flows out; in the mean while, being well in ſtomach, viſage, and ſtrength, he walks abroad, rides, and performs all exerciſes he was formerly ac-

The reaſon thereof.

The Cure by a Paracentеſis of the breaſt.

cuſtomed to, vigorouſly enough. He uſed not (neither was there need of) much medicine, only after the Inciſion we adviſed temperate Cordials, *viz.* powder of Pearles, Juleps, and ſometimes Hypnoticks, and afterwards a vulnerary decoction to be taken twice a day.

By this method, and theſe forms of Medicines ſometimes continued, this worthy perſon ſeemed to recover his temper, and his ſtrength, and the habit of his body, and his breaſt exempt from the Dropſie. Notwithſtanding he ſtill wore a ſilver Pipe in the orifice of his ſide (out of which ichor daily flowed): and when after ſome months this being withdrawn, the Iſſue was ſhut up, a gathering of the ſame humour was made within the hollow of his breaſt, perceivable by the ſound and fluctuation thereof: but when that the diſeaſe returning, the ſame medicine was to be uſed, and inciſion of his ſide appointed, (Nature by chance diſcharging the function of a Chirurgeon) the matter being prone to burſt out, and flowing to the place made its own way. He is now neceſſitated (for preventing the illuvies of his Breaſt) to keep that orifice conſtantly open like a ſink.

From theſe things I think it manifeſt enough, that an Aſcites of the Breaſt, ſometimes ariſes from the lymphatick veſſels burſt aſunder within the Lungs; neither doubt I leſs but that the ſame affection may be cauſed from the chyliferous paſſages being broke within the Thorax; notwithſtanding, this chance ſo rarely happens, that as yet I have not known it by my own obſervation, or others relation. Moreover, it little avails to make inquiſition into the Ætiologie of ſuch a diſeaſe, becauſe it is not only apparently incurable, but in a ſhort time mortal; becauſe the Precordia are incontinently overflown by the inundation of the chyle, and alſo the blood and the animal ſpirits being defrauded of their wonted ſupply of nutritious Juice, are immediately diſſolved.

The differences of this diſeaſe. From the various cauſes of this Diſeaſe even now ſet down, it will be eaſie to collect its differences: For firſt a Dropſie of the Breaſt, is either ſimple and primary, peculiar to this Region; or ſecondary, coming upon a general Dropſie, as it is wont often to be in cachectic perſons. Secondly, this Diſeaſe is diſtinguiſhed as to the places affected, *viz.* foraſmuch as water is either collected in the whole breaſt, or only in one ſide thereof. Thirdly, as to the matter accumulated in a pectoral Aſcites, which one while is limpid and plainly wateriſh, another while more thick, whitiſh, and as it were milkie, ſuch as we have deſcribed in the foregoing Hiſtory.

The Diagnoſtick ſigns. The diagnoſtick ſigns do manifeſtly enough diſcover this diſeaſe: *viz.* the fluctuation of water is perceived by handling, and by feeling at every bending of the body, and the ſound is clearly heard. Moreover they are affected much with a dry and empty Cough, as alſo with a Dyſpnœa almoſt continual and painful, eſpecially while they aſcend ſteep places; Beſides, they have a thirſt, with a little feaver, and in the night after the firſt ſleep, great diſquiet and toſſing of the body, proceeding from the vapours being elevated by the heat being more intenſe. Sometimes there comes upon theſe a Palpitation of the heart, an intermitting or diſturbed Pulſe, and frequent faintings of the ſpirit. As to the prognoſtick, this diſeaſe is always difficult to cure, and among the vulgar accounted incurable. And ſurely if it come upon an Aſcites of the Abdomen or an Anaſarca throughout the whole body, it is judged not without cauſe deſperate; But if the affection be primary, and happen to a body otherwiſe ſound, we are not altogether to deſpair of Cure.

The Cure. What relates to the curatory part of this Diſeaſe, the chief Indications will be three, Curative, Preſervative, and Vital, according to the common method of curing in moſt other Diſtempers.

The firſt has regard that the water heaped up in the cavity of the Breaſt by any means be evacuated. The Second provides, that afterwards a new illuvies be not gathered in the ſame place. The Third procures the reſtoration of ſtrength, and the ſymptoms impairing it to be removed with expedition.

What Intentions of healing the firſt Indication ſuggeſts. To ſatisfie the firſt Indication, and that an Aſcites of the Breaſt may be emptyed, there are but two ways or means of evacuation to be met with, whereby this collection of waters may be drayn'd, *viz.* Either that the veſſels of the Breaſt, and the paſſages of the humours, being emptyed, might ſuck up that Lympha being rarified, and afterwards by the paſſages of the blood or air convey them forth: or ſecondly, that by an inciſion of the ſide, thoſe waters may be drained forth plentifully in their own Species.

That

That former manner although more ſeldom, yet ſometimes ſucceeds; which I can atteſt out of my own obſervation. For the conſiſtence of the Lungs being ſpongy within, and externally very porous, while by every turn of the Diaſtole, they are drenched in the underlying waters, they ſometimes imbibe them being turn'd into vapour; and ſo diſpatch them to the blood, or continually exhale them with aire coming out at the mouth. That an effect of this ſort may more eaſily happen to cure this diſeaſe, medicinal aids are taken: For that intention therefore the paſſages of blood, aire, and humours ought to be emptyed as much as may be, and to be kept ſo empty. For this purpoſe, Purges, Diureticks, and more mild Diaphoreticks are methodically, and alternately exhibited; alſo remedies for the breaſt, and expectorating, challenge here their place; let the Diet be ſlender and warming, and a government appointed as to all other things of that nature, that the blood may be made to exhale the more, and all the ſuperfluous humours to evaporate. I think good to annex ſome forms of Medicines accommodated to theſe uſes. *The firſt Intention.*

Take of Chervil-roots, Knee-holme, Polypodie of the Oak, of each an ounce, Agrimony, white Maidenhaire, Oak of Jeruſalem, Ground Ivy, of each one handful, Carthamus ſeeds one ounce, Florence-Orris half an ounce, ſeeds of Danewort 5 drams, Calamus Aromaticus half an ounce, boyl them in four pound of Spring-water, to the conſumption of a third part, adde to it being ſtrained Senna one ounce and a half, Agarick two drams, Mechoacan and Turbith, of each half an ounce, yellow Sanders a dram and a half, Galangal the leſs one dram, boyl them two hours gently, and cloſe covered, afterwards ſtrain it and adde of Honey two ounces, clarifie it with the white of an Egge, make a purging Hydromel. The Doſe is from ſix ounces to eight, in the morning, twice or thrice in a week. Or, *A Purging Hydromel.*

Take Mercurius Dulcis one ſcruple, Reſine of Jallap half a ſcruple, Balſam of Peru what ſuffices to make four Pills, to be taken in the morning, and to be repeated within five or ſix dayes.

Take Tincture of Sulphur three drams, take from ſeven drops to ten, at night and in the morning, in a ſpoonfull of the following mixture, drinking after it three ſpoonfulls. *Tinctures.*

Take of the water of Snails, Earth-worms, and compound rhadiſh water, of each four ounces, water of Elder-berries fermented one pound, Syrup of Juice of Ground-Ivy two ounces, mix them for a Julep. Or, *Julep.*

Take of Tincture of Ammoniacum, or Galbanum, take twenty drops evening and morning in the ſame mixture. Or,

Take of Hog-lice prepared two drams, flower of Sulphur two ſcruples, flower of Benzoin one ſcruple, powder of wild Carrot and Burdock-ſeeds, of each half a dram, Turpentine of Venice, enough to make a maſs. Make ſmall Pills. Take four evening and morning, drinking after them a ſmall draught of the Julep. *Pills.*

At Nine a Clock in the Morning, and Five in the Afternoon, let him take four onces of the Compound Lime-water, by it ſelf, or with any other proper remedy. *A Lime-water.*

For ordinary drink take the following Bochete.

Take Sarſaperilla ſix ounces, China two ounces, white and yellow Sanders, of each ſix drams, ſhavings of Ivory and Hartshorn, of each three drams, Calamus Aromaticus half an ounce, Raiſins half a pound, Liquoriſh three drams, boyl and infuſe them in twelve pound of Spring-water to ſix pound, ſtrain it. *A Bochet.*

Formerly about twenty five years ſince, when I reſided at *Oxford*, I was ſent for to a young Scholar, who ſuffered for three weeks ſpace under a pain of the Thorax, and a moſt grievous Dyſpnœa conſtantly troubling him in the evening, moreover, from a more quick motion of body, or going more haſtily than uſually up any ſteep place, he laboured extreamly, he could not ly down long on either ſide, but was neceſſitated to lye in his bed ſupine, and his head erect; if perhaps he attempted to lye on either ſide, immediately pain followed that poſition of body, and if perhaps he roll'd himſelf from one ſide to another, the pain being alſo preſently tranſlated, he felt as it were water to wave from place to place. Hence I had a juſt ſuſpicion of a Dropſie of the Breaſt, whereof that I might be more aſſured, I order'd that lying upon his back on his bed, he would ſuffer his head to bend backward from the bed-ſide to the floor, immediately he had a plain perception of *A Hiſtory of a Patient.*

of water running towards the Clavicles, together with a change of the pain thither. Moreover if at any time he grew more hot than uſual, from motion, or in his bed, or by the fire, he preſently felt ſenſibly in his breaſt, as it were water boyling over the fire, and alſo complained of a Vertigo, and a ſmall decay of Spirits. Wherefore, when we might lawfully collect out of theſe things rightly conſidered, that he was affected with a dropſie of the breaſt, I preſcribed the following method and medicines with ſucceſs.

The Cure of him. *Take of Mercurius Dulcis fifteen grains, Reſine of Jallap half a ſcruple, Syrup of Roſes ſolutive what ſuffices, make three Pills. He took them early in the morning and had twelve ſtools with great eaſe; afterwards on the third day by the ſame Medicine he had but four, but with greater benefit; he took afterwards for many dayes ſix ounces of the Pectoral and Diuretick Apozeme twice in a day, and laſtly repeating the Purge he perfectly recovered.*

SECT.

SECT. II.

Of Splanchnick remedies, or thoſe which reſpect the bowels of the lower Belly.

CHAP. I.

Of the Jaundies and the remedies thereof, and the manner and reaſon of their operations.

HItherto we have largely enough unfolded the Pathologie and curatory method of the Thorax; now it follows next to finiſh our task in like manner about the lower Belly. But we have in our former tract for the moſt part deſcribed already the medicines belonging to this region, and the manner and reaſons of their working, together with the Anatomy of the Stomach and Inteſtines: we have treated of remedies ſtomachical, dyſenterical, and others belonging to the inteſtines, as alſo diureticks together with the reaſons of them: Moreover we have ſufficently elſewhere handled the ætioligie of Hypochondriack, and Hyſterical remedies. What therefore remains, of Hepatical diſtempers as well proper, as of thoſe vulgarly aſcrib'd thereunto, and of their remedies we will diſcourſe in this Section; notwithſtanding in each of theſe, we will beſtow more labour, about the curatory, than pathological part.

The chief diſeaſes by which the Liver and the appendix thereof, are wont to be incumbred, are the Jaundies, and a Tumour, and under this latter many other affects, *viz.* obſtruction, inflammation, induration, and ſchirrus are numbred; to all which are vulgarly appointed remedies commonly called Hepaticks, and which make up a great part of the Diſpenſatory. *Diſeaſes of the Liver.*

The Jaundies is either a diſeaſe by it ſelf, primarily beginning, which is here properly treated of: or it is an effect or product of another diſeaſe; as when it ariſes upon an intermitting Feaver, which oftentimes it puts an end to, of which alſo we will preſently treat by the by.

An Icterical diſtemper by the common conſent of moſt is judged to ariſe in as much as the yellow choler, not at all, or not enough received, from the ends of *vena porta*, into the paſſages of the cholerick pore, overflows into the maſs of blood and pollutes it with its greenneſs, whereby alſo the very skin is diſcolour'd. *The Jaundies.*

That obſtruction is wont to happen after many manners and in various places. For ſometimes it happens near the extream ends of either kind of veſſels, *viz.* the end of the *vena porta*, and the *porus bilarius*; the interſpaces whereof happen frequently to be compreſſed, and ſtopt by reaſon of the Parenchyma of the Liver being tumefied, or otherwiſe vitiated; wherefore the humour of the gall not being transferred out of the ſeparating veſſels of the *porta* into the other receiving veſſels, turns back upon the blood. Secondly, the paſſage of the humour of the gall is ſometimes intercepted in the middle paſſages of the cholerick pore; for that the cavities of theſe are filled either with a viſcous, or ſandy, and ſometimes with a ſtony matter; as is plainly diſcerned in the Livers of beaſts in the winter ſeaſon, while they are fed with hay and ſtraw. Thirdly, it is alſo manifeſt by Anatomical obſervation, ſometimes an obſtruction in the very bladder of the gall, or in the cyſtic paſſage is the cauſe of the Jaundies; for if at any time, it being filled with ſtones, receive not the choler, or being here ſhut up, or grown together, it reſtrains the deſcent of the choler towards the guts, that humour although well ſeparated from the blood, is conſtrained to flow back into the maſs thereof, and ſo propagates the Jaundies. *The cauſe of it.*

Againſt this moſt received opinion, by which it is judged, that the cauſe of the Jaundies for the moſt part conſiſts on this ſide the *veſica fellis* or about it towards the Liver: the moſt Renowned *Sylvius* altogether places it without this, *viz.* in the Cyſtic *The opinion of Sylvius of the cauſe of the Jaundies.*

Cyſtic or common paſſage. For ſuppoſing the choler not to be ſeparated from the blood, within the paſſages of the Liver, but in the very bladder of the Gall to be propagated of a humour brought thither by the Arteries; He judged the greateſt part, being carried upwards by the paſſage of the *pori bilarii*, to be poured into the blood for ſome notable uſes, and alſo another part to deſcend beneath to the Inteſtines, alſo for neceſſary uſes: wherefore if this latter ſluce be ſhut, all the choler is carried upwards into the blood, and filling it too much with this humour, perverts it from its genuine temper, into an Icterical.

But truly leſt the ſtopping of the paſſage of the bladder, or of the common paſſage, (neither of which eaſily happens, or from any light occaſion) may ſeem leſs efficacious to excite any Jaundies; therefore, *whether ſuch an obſtruction hath place, or no*, the moſt Renowned man ingeniouſly ſuppoſes beſides, *The choler while it is generated in the bladder does undergo ſometimes a notable change, by which it is moved, and is born about more plentifully and impetuouſly*, towards the blood, *with which yet it is leſs mingled than it was wont to be, but only confounded together with it, and ſo more eaſily departs from it and infects and tinges the ſolid parts with its colour.*

But that the *choler in the Jaundies may be rendred unfit to mix with the other humours, or to be nearly united*; he determines it to be done, *by a ſpirit too volatile, mixed plentifully with it, and ſo making it more ſpirituous and immiſcible with others.* He confirms this aſſertion by two inſtances, *viz.* in as much as the moſt ſpirituous poiſon from the biting of a Viper, and the too much uſe of the more generous drinks, *viz.* Wine and Strong-waters, cauſes ſometimes the Jaundies. Moreover he endeavours to procure credit to this Hypotheſis, for that this diſeaſe is wont to be cured, not only by medicines opening obſtructions, but by them which blunt the force of a raging volatile ſalt (of which *ſort are the decoction of Hemp-ſeeds, alſo* Venice *ſoape* with many other things of the ſame ſort.)

It belongs not to this place, neither is it to our purpoſe to deſcend to end this contention, nor dare I now raſhly determine it (ſince it hath tired ſo many Renowned Wits of the Moderns) whether really the choler be made in the bladder of the Gall, or whether it be only ſeparated from the blood in the Liver, the great organ of ſeparation; I confeſs this latter opinion beſt pleaſes me. And weighing theſe things ſeriouſly I am induced to think the cauſe of the Jaundies to conſiſt chiefly in this, that the choler being ſever'd in the Liver, is not, by reaſon of the ways being obſtructed, at all, or not enough conveyed to the bladder of the Gall, but that it muſt of neceſſity regurgitate into the maſs of blood; notwithſtanding in the mean while we deny not, but this affect may ſometime ariſe (although more rarely) from the Cyſtic paſſage or common pipe being obſtructed. But alſo we think the fault of the blood to preceed in part and perhaps ſometimes wholly for the morbific cauſe; when to wit from its ſulphurous and fixt Saline Particles above meaſure exalted, the choler is more plentifully, or quicklier generated in the maſs of blood, than can be ſeparated or diſcharged forth by the ordinary ways; wherefore this, ſeparating every where from the blood with the Serum, is affixed to the ſolid parts, and impreſſes its tincture upon them. And without doubt it is for this reaſon that ſome poiſons, and chiefly the biting of Vipers, and the dayly uſe of more generous drinks, induces the Jaundies in bodies before ſound, for whoſe cure ſometime Phlebotomie, and medicines reducing the blood to a right temper, are wont to profit more than thoſe opening obſtructions. Moreover it ſeems for this reaſon, that a tertian intermiting Feaver ſo frequently terminates in the Jaundies; for we may not ſuſpect the paſſages of the Liver can be by any means obſtructed, ſince in all fits, ſo great an agitation of the blood and humours, by cold, and heat, and ſuch an evacuation of them happens either by vomit or ſweat: and truly even as feaveriſh fits are cauſed, inasmuch as the ſulphurous part of the blood being too much advanced, in the firſt place perverts the nutritious juice into a morbific matter, and afterwards being inflam'd conſumes and exterminates it; ſo when the fixt ſalt is at laſt exalted together with the ſulphur in the blood, and for that cauſe meer choler is abundantly engendered, the feaveriſh enkindling of the blood ceaſes, by reaſon of the reſtrictive force of the fixt ſalt, and in place thereof the diſtemper of the Jaundies doth ſucceed. But as the blood being too much advanced to a ſulphureo-ſaline diſtemperature cauſes the Jaundies in any, though leaſt prediſpos'd to it; ſo in others very much diſpoſed thereto, having the ways of choler obſtructed & the ſulphur of the blood being too much depreſſed, it produces a freedome from that diſeaſe; for I have known many cachectick and phlegmatick perſons, to have been free from the Jaundies

The Author's opinion.

The cauſe of this diſeaſe ſometimes in the blood.

dies, though they have ſuffered under obſtructions and indurations of the Liver, as to moſt of its paſſages.

It is not worth our labour to make more ample diſquiſition about the ætiologie of this diſeaſe; as to what reſpects the cure, there will be three primary indications, all which (for what may be the chiefeſt of them, and firſt to be exhibited, for the moſt part is concealed) we ſhall proſecute together; wherefore the intentions of healing ſhall be, 1. That the obſtructions of the paſſages or choler-bearing veſſels be opened, if perhaps any ſhall be either in the *porus bilarius*, in the Cyſtic paſſage, or in any place about the Liver. 2. That the blood be reduced to its due temperament and mixture, leſt it ingender choler above meaſure, or render it unapt to be voided. 3. That the ſtrength may be ſuſtain'd, and the ſymptomes chiefly hurting them may be withſtood. *The cure of the Jaundies.*

1. That we may ſatisfie the firſt indication, cathartic evacuations notably conduce, as well by vomit, as ſiege, whereby the choler's deſcending towards the inteſtines may be furthered, and veſſels obſtructed, by the great ſhaking of them, freed from their obſtruction. 2. Sharp, bitter, ſalt medicines and others indued with a certain briskneſs ought alſo to be given, which provoke the motion of choler gathered in the Liver, and ſtagnating; hither alſo ought to be referred, what by ſimilitude of ſubſtance, and as it were ſignature, in as much as they are indued with a yellow juice, have the report to help againſt the Jaundies; notwithſtanding many of theſe may fitly be numbred under the ſame claſſis of evacuators, as the former, becauſe they move urine or ſweats. *The 1. Indication.*

The ſecond indication altogether requires alteratives, *viz.* medicines which may depreſs the exaltations, or ragings of the Sulphur and fixt ſalt, and in the mean time provoke the reſtitution of the volatile ſalt depreſſed; for theſe ends remedies endued with an acid or volatile ſalt, beſides chalybeats do principally bring help; from hence ſpirit of ſalt, of vitriol, juice of Lemons, alſo ſpirit of Harts-horn, alſo dung of Sheep, and Geeſe, *crocus Martis* and diverſe other preparations thereof, are frequently uſed with ſucceſs in the Jaundies. *The 2. Indication.*

The third indication vital ſuggeſts more and ſundry intentions of cure, procuring the ſtrength to be reſtored, and the removing the ſymptomes whereby it is prejudiced, all or the chief particularly to enumerate, and preſcribe would be a vaſt and tedious work; wherefore we will annex only certain general rules about diet, and ſome cordials and anodynes appropriate in this condition. *The 3. Indication.*

The curatory indications being appointed after this manner, it next lies upon us to acommodate the moſt ſelect medicines, *viz.* as well the ſimple as the compound, to theſe now propoſed intentions of curing, and to unfold the manner and reaſon of the operating of remedies which are accounted of ſpecial note in this diſeaſe. Therefore firſt we propound the forms of evacuating medicines appropriate in the Jaundies. *Forms of Remedits.*

1. *Vomits.*

Vomiting medicines are frequently wont to help in the recent Jaundies, while the tone and ſtrength of the bowels are firm; in as much as they alleviate the ſtomach always oppreſſed in this diſeaſe with an unprofitable burden of viſcous phlegm; and moreover do free their infarctions by irritating the *vaſa choledocha*, and by much ſhaking all the paſſages of the Liver, and make eaſie the paſſage of the choler by the former accuſtomed ways. *Vomits.*

Take of the infuſion of Crocus Metallorum half an ounce to ſix drams, Wine of Squils an ounce, Oxymel ſimple half an ounce, make a vomit to be taken with government.

Sometimes it is convenient to exhibite, the evening before, the following preparatory medicine for the eaſier vomiting.

Take of the powder of Aſarum roots, facule Aronis of each a ſcruple, of Tartar vitriolated half a ſcruple, of Oxymel of Squils an ounce, mix them.

Take of Sulphur of Antimony ſeven grains, Scammony ſulphurated eight grains, cream of Tartar half a ſcruple, make a powder, give it in a ſpoonful of panada.

Take nine Aſarabacca leaves, cut and bruiſed put them into three ounces of white wine, preſs out the liquor, let it be taken in the morning with regiment.

Take of Gambugia prepared eight grains, Tartar vitriolated ſeven grains, make a powder.

2. *Cathartick.*

Purgers. Purgers take place in this diſeaſe, be it recent or inveterate, *viz.* that as well a more plentifull ſtore of Excrements may be now and then withdrawn from the firſt paſſages, as that the *vaſa choledocha* may be excited to Excretions.

A Bolus. *Take of Electuary of juice of Roſes three drams, Rhubarb a dram, Salt of Wormwood, Cream of Tartar, of each half a Scruple, Syrup of Rhubarb, make a Bolus.*

Apozems. *Take of the roots of ſharp-pointed Dock prepared one ounce, the tops of Roman Wormwood, of Centaury the leſs, of each P. ij. Gentian and Turmerick roots an. two drams, yellow Saunders one dram, boyl them in a pinte and a half of Spring-water to a pinte, adding towards the end Senna ſix drams, the beſt Rhubarb three drams, Agarick a dram and half, Coriander-ſeeds two drams, White-wine two ounces, let them boyl cloſe two hours, after ſtrain it and clarifie it by ſettling; the Doſe from four ounces to ſix, with one ounce of Syrup of Rhubarb, the water of Earth-worms three drams; make a potion to be repeated every or every other day, for three or four dayes.*

In a weaker Conſtitution.

A Potion. *Take choice Rhubarb two drams, Agarick trochiſcated, half a dram, Cinnamon half a ſcruple, Ginger half a ſcruple, make an infuſion in White-wine and Cichory-water, of each three ounces, for three hours, in it ſtrained diſſolve one ounce of Syrup of Rhubarb, water of Earthworms two drams. Or Rhubarb from half a dram to a whole one, Salt of Wormwood a ſcruple, make a powder.*

Pills. *Take pil. Ruffi a ſcruple, Extr. Rudii half a ſcruple, make 4 Pills, take them in a morning with government, after 4 or 5 dayes repeat them.*

Deoppilative Medicines. In the third place follow Deoppilatives, which are alſo Diureticks, or Diaphoreticks, ſome whereof are accounted ſpecifick, by reaſon of ſimilitude of ſubſtance; Medicines of this ſort, both promote the ſeparation of choler from the blood, and urge the paſſage of it, being ſeparated, through the paſſages and pores in the Liver open but little. Moreover, in the mean time, by diſſolving the blood, they carry off the ſeroſities and cholerick recrements thereof, ſometimes by ſweats and urine.

Elixir. *Take of Elixir Proprietatis one ounce, take 20 drops in the morning, and at Five in the afternoon, with a convenient vehicle: after the ſame manner are taken, Tincture of Antimony, or of Salt of Tartar, and the ſimple mixture in a greater Doſe: for vehicles, Apozemes, diſtilled Waters, and Juleps for this Intention of curing are convenient.*

Apozems. *Take of the roots of Celandine the greater, ſtinging Nettles, Madder, of each one ounce, tops of Roman Wormwood, white Horehound, Agrimony, Germander, of each one handfull, Worm-ſeeds two drams, Shavings of Ivory and Harts-horn, of each two drams, yellow Sanders a dram and a half, Coriander-ſeeds two drams, boyl them in three pound of Spring-water to two pound, adding of White-wine four ounces, ſtrain it, and adde Syrup of Chichory with Rhubarb two ounces, water of Earth-worms, an ounce and a half, make an Apozeme, the Doſe four or ſix ounces twice in a day.*

Take of white Horehound dryed, Centaury, of each one handful, Gentian and Turmerick-roots, of each three drams, Cinamon one dram, Saffron half a dram, being ſliced put them into a Glaſs with two pound of White-wine or Rheniſh-wine; make an infuſion, the doſe three ounces.

To this we will adde *Geſners* famous Antictericum.

Take of the roots of ſtinging Nettles a pound, Saffron one ſcruple, bruiſe them well, and draw off the tincture with White-wine, the doſe three ounces 4 or 5 dayes.

Empirick Remedies. Like to the former is that of *Fr. Joel. Take the Roots of Celandine the greater, two handfuls, Juniper-berries a handfull, bruiſe them and pour on them a pound of Rheniſh-wine, and draw out the juice, the doſe four ounces twice a day.*

The juice of white Horehound is mightily commended by Dioſcorides, *and the Syrup of the ſame by* Foreſtus, *for curing the yellow Jaundice.*

In

In lieu of an Elixir, and other chymical liquors, which to avoid nauſeouſneſs are to be taken in very ſmall quantity; to others endued with a ſtronger Conſtitution, Electuaries, Powder and Pills may be adminiſtred with better ſucceſs.

An Electuary.

Take of Conſerve of Roman Wormwood, of the yellow Rinds of Oranges and Limons, of each two ounces, Species Diacurcumæ one dram and half, powder of Ivory, yellow Saunders, of Lignum-Aloes, of each half a dram, Troches of Capers one dram, of Rhubarb half a dram, Salt of Wormwood two drams, with Syrup of Cichory with Rhubarb, make an Electuary, the doſe the quantity of a Cheſnut twice a day, drinking after it three ounces of the following Julep.

Diſtilled Waters.

Take of the greater Celandine-water, Fumitory, Wormwood, Elder-flowers of each five ounces, Snail-water, water of Earth worms, compound, of each two ounces, Sugar half an ounce, mingle them and make a Julep. Or,

Take of the roots of ſtinging Nettles, Angelica, Gentian, of each four ounces, the greater Celandine leaves and roots, ſix handfuls, Wormwood, Tanſie, Southern-wood of each four handfuls, the outer rinds of twelve Oranges and four Limons, prepared Worms and Snails of each one pound, Cloves bruiſed two ounces, being all cut and bruiſed pour upon them eight pound of White-wine, let them be diſtill'd in a cold ſtill, and the whole water mixt. Or,

Take of filings of Steel one pound, freſh Strawberries ſix pound, put them into a glazed pot, ſtirring them together, and let them ſtand a day, afterwards adde of Engliſh Rhubarb ſliced one pound, the rinds of four Oranges ſliced, pour upon them of White wine ſix pound, and diſtill them according to Art; let all the liquor be mixt together. The doſe of this and of the former is three ounces twice in a day after the Electuary or any other medicine.

Take of Turmerick-roots, Rhubarb, of each one dram and a half, the Bark of Caper-roots, of Aſarum-roots, of each half a dram, Extract of Gentian, and Centaury, of each one dram and a half, Salt of Wormwood four ſcruples, Water-creſs-ſeeds half a dram, of Rocket half a ſcruple, Elixir Proprietatis one dram, gum Ammoniacum diſſolved in the water of Earth-worms what will ſuffice to make a maſs, form it into ſmall Pills, the doſe is half a dram evening and morning, drinking after it three ounces of the diſtilled water.

Sylvius doth much magnifie for cure of the Jaundies, the Decoction of Hemp-ſeed in milk, and the ſolution of Sope, and from thence endeavours to eſtabliſh his own Hypotheſis (as we have above intimated) whereby he endeavours to deduce the Ætiologie of the Jaundies, rather from an alienation of the choler, than from the obſtruction of its paſſages.

Sylvius his Empirical Remedies.

2. The Second Indication reſpecting the altering or tempering of the blood, by which it may breed but moderately, and duly ſeparate the choler, requires Medicines of that ſort, which depreſs the Sulphur and fixt ſalt too much advanced. For theſe ends, I know not by what chance or conduct Medicines endowed with a volatile ſalt, as Worms, Snails, Millepedes, yea Lice, Dungs of fourfooted Beaſts, and Fowl, are brought into practice for curing the Jaundies, and not only preſcribed by Empiricks, but the more famous Phyſicians: Theſe ſometimes by themſelves, but oftener joyn'd with Purgers and Deoppilatives, become the chief Ingredients in Compoſitions againſt the Jaundies.

The ſecond Indication. Remedies againſt the Jaundies endowed with an animal volatile Salt.

Fonſeca preſcribes Gooſe-dung gathered in the Spring-time and dryed, as alſo the white excrement of Pullets, of both which let the Powder be given in a convenient vehicle from half a dram to a whole one.

Various forms of them.

Take powder of Earth-worms prepared, of Gooſe-dung, of each three drams, Ivory, yellow Sanders, of each half a dram, Saffron one ſcruple, make a powder, divide it into ſix parts. One to be taken every morning with ſome appropriate liquor. To the Apozeme, or Antiicterical Tincture preſcribed above, Earth-worms, Gooſe-dung, *and alſo* Sheeps-dung *are profitably added.*

Take Millepedes freſh and alive from 50 to 100. Saffron half a Scruple, Nutmeg a ſcruple, bruiſe them together, and infuſe them in Water of Celandine four ounces, of Earth-worms two ounces, expreſs them ſtrongly, and drink it: after this manner take it firſt once, then twice in a day for a week.

The vulgar and Empirical remedy with us is, that Nine quick Lice be taken in a morning for five or ſix dayes, by which remedy they report to me many to be cured (whenas other remedies effected little) which truly can help by no other means than by reſtoring the volatile Salt depreſſed in the blood.

Alſo ſuch as are endued with a mineral volatile Salt.

Upon the ſame account of ſuccour even in this diſeaſe the flowers of Sal Armoniac, the volatile Salts of Amber, Harts-horn, Soot, in like manner their Spirits are frequently adminiſtred with great ſucceſs.

Take powder of Earth-worms prepared two drams, Species Diacurcumæ one dram, flower of Sal Armoniac half a dram, Salt of Amber a ſcruple, Extract of Gentian one dram, Saffron one ſcruple, Gum Ammoniacum diſſolved in water of Earth-worms what ſuffices, make a maſs, and form it into ſmall Pills; the Doſe is three or four, morning and evening, drinking after it three ounces of the Julep before preſcribed.

Take Spirit of Harts-horn tinctured with Saffron three drams; Doſe from 15 drops to 20. with the diſtilled water preſcribed above.

Steel remedies of ſeveral kinds.

In this Claſs of Medicines by which the icterical diſtempers of the blood are to be corrected, ſteel'd remedies do alſo challenge their place by right; for theſe afford notable help, not ſo much by unlocking the obſtructions of the bowels, as by depreſſing the rage of the Sulphur, and fixt Salt, and by volatilizing the blood, in the Jaundies, no leſs than in other cachectical diſtempers.

Wherefore, to the Decoction, or Tincture, or Infuſion above preſcribed, is properly added the filings of Iron, or the prepared powder thereof (its mineral conſiſtence being ſome wayes opened) or the vitriolic Salt extracted; from hence it is, that Medicinal waters heal even to a miracle thoſe ſick of the Jaundies, that had been deſpaired of; although theſe drunk in a very large quantity, inaſmuch as they paſs through all the veſſels, do alſo open the paſſages of the Liver, however ſhut up.

Therefore alſo even Preparations of Steel are added to the Electuary, Pills and Powders above recited, one while this, another while that, in due proportion. Moreover the Syrup thereof given twice a day to one ſpoonfull, in three ounces of Apozeme or water againſt the Jaundies; alſo tincture of Steel to twelve or fifteen drops may be adminiſtred in the ſame manner.

Outward and Sympathetick remedies againſt the Jaundis.

In the laſt place we may annex to this claſſis of altering Medicines thoſe things which not taken inwardly, but outwardly applyed, and by contact, uſed to the very urine of the Patient are held to cure this diſeaſe.

As to the former, a remedy often tryed by the vulgar, is a living Tench-fiſh, whoſe Scales and outer ſuperficies do reſemble a yellow colour, applyed to the right Hypochondria, or Stomach according to ſome, (to the ſoles of the feet, according to others) whence a ſudden flight of this diſeaſe is expected; hence although many promiſe themſelves a ſure cure, it hath often deceived me.

Another cure of the Jaundies at a diſtance is ſaid to be done by I know not what ſympathy or ſecret manner of working.

Take the freſh Urine of the Patient made at one time, of the aſhes of the Aſh-tree ſearced, as much as ſuffices to reduce it into Paſte, which may be formed into three equal balls, to be placed in a place ſhut, near the hearth or Stove; as theſe dry and harden, the Jaundies will vaniſh; after this courſe, I have known this inveterate diſeaſe happily cured, although reſiſting many other remedies; the practice thereof is very familiar with the Vulgar.

The reaſons of ſome of them.

If of a certain it could be made manifeſt that this effect doth for the moſt part happen, and the reaſon of it be inquired into; in the firſt place we ought to ſuppoſe a conſent or ſympathy of the ſpirits and other particles in the animated blood, with other ſymbols inmates of the freſh urine; and that they immediately are affected in the like manner with theſe. Notwithſtanding it is evident enough that a lixivial Salt mingled with urine, doth preſently ſet free the volatile ſalt formerly ſubdued or enwrapt in other particles; as is plainly ſeen in diſtillation of Urine, which if you urge by it ſelf with a ſand-heat, nothing but phlegm will ariſe; but adde the calx of Tartar, or Aſhes, immediately the Spirit and volatile Salt will come forth: wherefore, that Empirical adminiſtration being adminiſtred, at the ſame time, both in the Icterical urine, and alſo in the blood of the Patient, the volatile Salt eſcapes out of the power of the fixt Salt and the Sulphur, and for that cauſe the icterical

rical diſtemper of the Blood is put to flight. Alſo upon the ſame reaſon is built another ſympathetical cure of the Jaundies, whereof *Phil. Grulingius* and *Felix Platerus* do make mention, *viz.* the ſick party piſſing upon Horſe-dung while it is hot, hath cured many of the Jaundies; inaſmuch as the fixt Salt of the Urine, and thereby the fixt Salt of the icterical blood of the patient, is altered by the volatile Salt of the freſh dung, and reduced into its due temperature.

3. The third Curatory indication vital inſtitutes a convenient courſe of Diet, and moreover Cordials and Anodynes, of both which there is frequent need. *The Third Indication vital.*

As to what relates to the former, Food in this diſeaſe, more than in any other ought to be medicinal. For Vegetables and their parts, ſtyled commonly Hepatick remedies, are boyled in the broths of theſe Patients. And theſe alſo are wont to be made inſtead of other fleſh, of Worms, or Snails, (which are accounted Antidotes againſt the Jaundies.) Moreover Ale, and other ordinary drinks are impregnated with infuſion of Medicaments.

Take of the roots of ſtinging Nettles, of Strawberries, of each an ounce and half, Eri-go-roots candied one ounce, Ivory and Harts-horn, of each two drams, Earthworms cleanſed twenty, a Cruſt of White-bread, Mace two drams, boyled in two pound of water to one pound, ſtrain it through Hippocrates *ſleeve, to which adde Diaſantalon half a dram, make broath, whereof take from four ounces to ſix, twice in a day: for ordinary drink, fill a Tub of four Gallons with Beer, after it hath wrought, put in the following Bag.*

Take the tops of Roman Wormwood, white Horehound dryed, of each two handfuls, the roots of ſharp pointed Docks ſix ounces, of the Bark of Aſh, of Barberries, of each 3 ounces, the outer Rinds of eight Oranges, and of four Limons, being ſliced and bruiſed, let them be prepared according to Art.

Since many ſick of the Jaundies are uſually affected with a great languiſhing, and frequent faintings of the Spirits, they have alſo need of cordial Remedies. *Forms of Cordials.*

Take of ſmall Aqua Mirabilis eight ounces, water of Earth-worms four ounces, Syrup of Orange-peels two ounces, mingle them, the doſe two or three ounces.

Moreover, they who are troubled with this diſeaſe, do very much ſuffer with pain ſometimes very troubleſome in the night, and are often obnoxious to waking; wherefore alſo Anodynes come into uſe for adminiſtration.

Take of Aqua Mirabilis, water of Earth-worms, of each one ounce, Diacodium ſix drams, Tincture of Saffron half an ounce, the doſe one or two ſpoonfuls late at night, if ſleep be wanting.

Take of Laudanum tartarizated two drams, Aqua Mirabilis two ounces, Syrup of Clove-gilly-flowers one ounce, mix them, the doſe is one ſpoonfull after the ſame manner.

SECT.

SECT. II. CHAP. II.

Of other Hepatick Remedies.

THe Liver is ſeldom or never found obnoxious to an Atrophie or extenuation, ſince truly it performs the office of a ſtrainer, and according to ſome, of a mingling bowel; but on the contrary by reaſon of many cauſes and occaſions, it runs the hazard of being encreaſed as to its bulk, and to be ſtuffi and ſwell'd with divers things gathered therein, and with concretions. Hence no ſmall account of health conſiſts in this, that the Liver having right conformation may freely convey the blood every where, without keeping back too much Cuſtome or proviſion for it ſelf.

The Kinds of Remedies aſſigned to the Liver.

Truly many faults, and indeed not altogether undeſervedly, are imputed to this Bowel, as alſo unto the Spleen; the chief Kinds of which we ſhall touch upon. The Liver frequently and chiefly is wont to be faulty in one of theſe two, *viz.* Firſt that intercepting the nutritious juice appointed for other parts, it beſtows it to its own proper uſe; this is plainly diſcerned in Children affected with the Rickets, and moreover in many others that lead a ſloathful and idle life. Anciently there was an art with the *Romans* ſo to feed a Gooſe that the Liver prodigiouſly encreaſed might weigh more than the whole body. Secondly, the other fault of the Liver is, that it too eaſily receives all the excrements and feculencies whatſoever of the depraved Blood, brought into its inward receſs, and by retaining them there, doth not only grow large, but is obſtructed in its paſſages, whence frequently comes the Jaundies, or a Dropſie; it contracts alſo tumours and preternatural Concretions of divers kinds of matter.

Two general intentions of curing this bowel.

Many and divers diſtempers of the Liver ought to be referred to theſe two heads: of each of which it is not our purpoſe to inſtitute particular pathologies. As to what appertains to the general pharmacie of this bowel, there will be one principal ſcope of curing, that its income be diminiſhed as much as may be, or altogether cut off. Wherefore it will behove us to procure theſe two things, *viz.* That the Liver augment not above meaſure, by taking the nutritious juice too much unto it ſelf; and that it retain not the feculencies of the Blood, whereby it may be affected with obſtructions and preternatural Tumours.

It will be much eaſier to prevent than cure either of theſe faults of this bowel. For truly the former may be done, reſpect being had only that the blood be well conſtituted in its Temperament, and enjoying a free Circulation, it may both diſpenſe its nutritious juice to the parts, and eſpecially its outward parts, and driving forth all its excrements to the particular Emiſſaries, it may put them away there. And ſurely, the Medicines vulgarly called Hepaticks, do firſt and more immediately exert their power by purging the blood, rather than by correcting of the Liver: thoſe namely conſiſt of particles of ſuch a kind, which entering into the blood, and not mixing with it, do ſo ſtirre up the maſs thereof, and break it into pieces, that all the Coagulations and Concretions being taken away, all its dregs and impurities may eaſily depart, and being carryed to their proper Emunctories may be caſt out of doors.

Medicines vulgarly called Splanchnick, firſt and chiefly operate upon the blood.

For truly all remedies which are called Splanchnick, firſt work upon the blood, and incite its conſtitutive parts into a kind of effervеſcency, and ſo toſs, divide, and move them rapidly to and fro, that the vaporous effluviums being ſent into the habit of the body, the ſerous excrements into the Kidneys, the cholerick into the Liver, the melancholy into the Spleen, and others to other Emiſſaries for which they are fitted, may be ſhut out, without impediment or adheſion.

What ſuch they are which more eſpecially reſpect the Liver.

Wherefore the ſame Remedies which help the Liver, help alſo the Spleen, the Reins, the Lungs, and other the Bowels in their ſeparations; and for the moſt part move ſweating and urine. If any be found to reſpect one part before the reſt by any ſpecifick power, it is therefore becauſe their particles being more ally'd unto the excrements to be ſeparated within that bowel, and from thence aſſociated to them are conveyed thither together with them. For this reaſon Rhubarb, Turmerick, the greater Celandine, with many others adjoyned to the bilious humour, do the more eaſily reach the paſſages of the Gall, and are wont to ſuccour in the Jaundies. We have obſerved before

before, the energies and manners of operating of Medicines of this kind. As to what appertains to the other, vulgarly called Hepaticks, firſt we will annex briefly certain forms of thoſe which are reported either to prevent or remove the unnatural augmentation of the Liver, and then thoſe which are held to provide againſt or take away the obſtruction and preternatural Tumours thereof.

1. Againſt the too much encreaſe, or improportionate nutriment of the Liver, firſt a more ſparing and thin diet, ſhort ſleeps, and moderate and frequent exerciſes are convenient: wherefore we preſcribe for Infants, and Children, when they are diſcovered obnoxious to this diſtemper, as in the Rickets, that they ſuck thin and ſerous milk, that they be ſhaken or toſſed in their Nurſes arms, and tumbled quickly to and fro, or be carried ſwiftly in a Chair or Coach, and as ſoon as may be, learned to go and to uſe their feet.

Some forms of Hepaticks.

Take of the water of Snails, of Earth worms, of each three ounces, Syrup of Chicory with Rhubarb two ounces, ſpirit of Sal Armoniac with Gum Ammoniacum one ſcruple, mix them, and take a ſpoonfull evening and firſt in the morning.

Take of the roots of Maleferne, Chervil, candied Eringoes, of each one ounce, the leaves of Agrimony, Harts-tongue, male Speed-wel, of each one handful, Shavings of Ivory, Harts-horn, of each two drams, white and yellow Sanders, of each one dram, Raiſins ſtoned one ounce and a half, Barly three drams, boyl them in three pounds of Spring-water to two, to it ſtrained adde of Snail and Earth-worm water, of each one ounce and half, Syrup of Chicory two ounces, make an Apozeme, take two or three ounces in a day.

Take Powder of white and yellow Sanders, Crabs-eyes, Lignum-Aloes, of each half a dram, Salt of Wormwood one Scruple, make a powder, the doſe half a Scruple to a whole one twice a day.

Take Empl. Diaſaponis, Cerate of Sanders, of each what will ſuffice, make a Plaiſter to be applyed to the Hypochondrion.

Take Unguentum Splanchnicum two ounces, Oyl of Wormwood one ounce, mixe them, and make a Liniment for the region of the Liver.

Hither many other methodical as well as Empirical Medicines being uſed for the Rickets may be referred, but we haſten to other things.

2. Remedies ordained for moſt other diſtempers of the Liver are either ſimple or compound. Very many of the former ſort are reckoned by Authors, as if they were procreated for this particular uſe. *Heurnius* ſays, *That God Almighty hath offered to the World the greater plenty of Remedies of this kind, by reaſon of their notable neceſſity.* And to this Rank may be referred in the firſt place all kinds of Chichories, the Sorrels, the ſharp pointed-Docks, and almoſt all Vegetables endowed with bitterneſs and ſomething of ſharpneſs, (wherein the deoppilative vertue is reported to conſiſt) as Wormwood, Germander, Ground-pine, Fumitory, Tanzy, Agrimony, Liverwort, Lignum Aloes, all the Sanders, Tamarisk-bark, and Aſh-bark, the roots of Capers, with many others, which commonly make up the greateſt part of Herbals; ſo that whilſt the Liver like a certain Goddeſs ruled ſanguification, very many Medicines were uſed to be aſcribed for its ſafeguard and ſuccour.

Their numbers enumerated.

First Simples.

The fixt Salts of herbs, the acid Spirits of Minerals drawn by diſtillation, belong by right to this number, as they do chiefly exagitate the maſſe of blood, diſſolve the Concretions thereof, diſpatch their obſtructions, and cauſe it every where to be paſſable, as to all the parts thereof.

If I here omit Chalybeates, moſt Chymiſts will cenſure me very unjuſt to the Liver; for truly as the Prerogative of *Venus* is vulgarly attributed to this bowel, ſo as to conſtrain to Love, we may hence expect that *Mars* will be perpetually kinde unto it. And really it is manifeſt by Reaſon, as well as Experience, that Preparations of Steel are convenient in hepatical affects, as chiefly in the Jaundies, and oftner in the Dropſie; wherefore theſe are put into the Receipts of the Ancients and modern, and among curatory Compoſitions. For what reaſon the Preparations of Steel as in like manner the medicinal waters from Iron, as well natural as artificial, do purifie the maſſe of blood, and by conſequence do relieve many diſtempers commonly call'd Hepatical, is ſhewn by us largely enough in another place, ſo that here is no need for repetition.

Chalybeates.

Medicines that are appointed by Phyſicians for the Liver are divided into vari-

ous

ous forms, but firſt into hot and cold, and alſo into moiſt and dry; accordingly as the temper of this bowel is ſuppoſed to conſiſt after divers manners: when in truth it is only a dyſcraſie of the blood, which being ſo diverſly faulty, deſires ſo various an energy of medicines. Neither is it a leſs vulgar error, that in the eſtimating of mens conſtitutions, the various temperament of every one due to the blood, is aſcribed chiefly to the Liver, as hot or cold, or otherwiſe diſpoſed.

The Shop-compoſitions of Hepaticks.

In the Antidotaries of the Ancients there are many Shop-compoſitions extant, which ſeem to be deſigned for the Livers ſake only, of which ſort are *Rhaſis* his Electuarie of the droſs of Iron, *Crocus ferri* of *Balchuſis*, which being mixt with Treacle is commended for hepatical affects; the *ſpecies Diatrion ſantalon*, *Diarrhodon Abbatis*, *Trochiſci* of *Rhubarb*, *of Agrimony*, *of Capers*, *Diacurcuma*, *Dialacca*, *Syrup of Wormwood*, *Coicorie*, *of the five roots*, *Byzantinus*, with many others, unto all whoſe forms, a vaſt Catalogue is annext for curing all the diſeaſes of the Liver. But theſe paſſed over, it pleaſes me now to propound ſome Kinds and Examples of Medicines which are counted deoppilative according to the practice of the Moderns.

Therefore for an opening Decoction,

Magiſtral Compoſitions.

Take of the roots of Ferne, Chervil, ſtinging Nettles, Dandelyon, of each one ounce, the leaves of Agrimony, Harts-tongue, Speed-well, Oak of Jeruſalem, *Liver-wort, of each a handfull, white and yellow Sanders, of each three drams, Ivory half an ounce, red Cicers an ounce, Coriander-ſeeds three drams, Raiſins two ounces, boyl them in four pound of water to two pound, adding towards the end White-wine four ounces, ſtrain it through* Hippocrates *Sleeve, to which adde Species Diarrhodon Abbatis one dram, of our prepared Steel two drams, Syrup of Chicory with Rhubarb two ounces, the Water of Snails and Earth-worms, of each one ounce, the doſe ſix ounces twice in a day after a doſe of the following Electuary.*

Electuary.

Take of Conſerve of the yellow of Oranges and Limons, of each two ounces, of Wormwood and Fumitory, of each one ounce, ſimple Powder of Aron-roots, yellow Sanders, Lignum Aloes, of Caper-roots of each one dram and a half, Crabs-eyes one dram, Salt of Wormwood two drams, ſyrup of Fumitory what ſuffices, make an Electuary, the doſe the quantity of a Walnut twice in a day, drink after it a draught of the Apozeme now preſcribed, or of the following diſtilled water.

A diſtilled Water.

Take the leaves of Wormwood, Centaury, Tanſie, both ſorts of Southern-wood, Tamariske, of each four handfuls, of green Walnuts four pound, of Aſhen keyes green two pound, the Rinds of ten Oranges and four Limons, Snails and Earth-worms prepared, of each one pound, all being ſliced, pour on them of White-wine eight pound, diſtill it in a cold Still, let all the liquor be mixt together, the doſe three ounces, ſweetning it with Sugar or a fit Syrup.

If a form of Pills will pleaſe better, the enſuing Extract called in the Shops *Extractum Ecphracticum*, ſeems profitable.

Pills.

Take of white and clear Tartar, and of freſh Filings of Iron, of each 4 ounces, let them be ground together into powder, after boyl them in Fountain-water from four pound to two (ſome uſe White-wine) to the ſtrained liquor adde the tops of Centaury, of Roman Wormwood, of Carduus, of each one handfull, Gentian-root half an ounce, Species Diacurcume an ounce and half, let them boyl ſhut cloſe for three or four hours, ſtrain it, and evaporate by the heat of a Bath to the conſiſtence of Pills, adding roots of Rhubarb or Species of Hiera Picra *two drams; the doſe is from one ſcruple to half a dram made into Pills, in the evening, with an appropriate vehicle.*

For the ſame intention, *viz.* to prevent or to remove the obſtructions of the Liver, a medicated purging Ale, to be taken many dayes in Spring and Autumn, is by ſome very much magnified, and exactly obſerved every year during their lives.

Take of the roots of ſharp-pointed Docks prepared, Polypodie of the Oak, of each 3 ounces, Madder-roots two ounces, Engliſh Rhubarb two ounces, of leaves of Senna four ounces, Epithymum two ounces, yellow Sanders one ounce, Carthamus and Coriander-ſeeds, of each one ounce and a half, ſlice them and bruiſe them according to Art, make a bag for 4 gallons of Ale, after ſix dayes let him take to 12 ounces more or leſs in the morning, expecting four or five Stools without regiment.

SECT.

SECT. II. CHAP. III.

Of Remedies for the Dropſie called Aſcites.

After the Jaundies and the Remedies thereof, our method leads us to treat of a Dropſie; not becauſe of the Vulgar opinion, that it always ariſes from the fault of the ſame bowel; but becauſe that former diſeaſe having long continued, for the moſt part concludes in this: which happens ſo, not ſo much from the fault of the Liver, as from the whole Blood, for this and not that perform ſanguification. Wherefore, when the maſſe hereof hath for a long time been filled with cholerick excrements, and at length degenerating from its temper, accumulates alſo watery humours, then doth a Dropſical Diſpoſition come upon the Jaundies.

The more remote cauſes of an Aſcites.

But whereas three ſorts of Dropſies are vulgarly ſuppoſed, viz *Aſcites*, *Tympanites*, and *Anaſarca*, we will at preſent handle only the two former, appertaining to the Splanchnick or Pathologie of the nether Belly. And firſt what relates to an Aſcites, this diſeaſe as to its matter and formal reaſon is manifeſtly known by the ſign of even many ſenſes together, *viz.* it is a Tumour of the Abdomen, from a wateriſh tumour contained within the cavity thereof. The water making this tumour, ſometimes encreaſes to a huge inundation, and ſcarce credible quantity. I have once ſeen a Tub would hold 15 gallons filled with water taken out of the Abdomen of a woman dead of a Dropſie. But whence that humour proceeds, alſo by what manner, and from what cauſes it gathers together in the belly firſt, and afterwards is ſenſibly augmented; and laſtly by what paſſages, and by what vertue and operations of Hydragogue Remedies, it may again be taken from thence, and evacuated, ſeems moſt difficult to be unfolded.

Firſt in reſpect of blood.

As to the former, *viz.* the encreaſe of water, ſome have thought it to deſcend from the Liver, and others from the Spleen diſtempered, into the cavity of the Abdomen; and ſo this bowel or that being vitiated, always to be the cauſe of an Aſcites. But that this is otherwiſe, Anatomies of many dead of this diſeaſe, do manifeſtly declare: when after the inundation of the belly, the Liver and Spleen are found often without fault. And truly theſe bowels do not ſeem the Springs of any ſuch illuvies, being endowed with no cavityes, wherein waters might be accumulated together: wherefore the origine of an Aſcites, as of a ſtanding Pool or Lake, is to be derived from a River, or at leaſt a glutt or inundation of ſome Humour.

It doth not always proceed from the Liver & Spleen.

The humours by which it is produced are,

The humours that flow within the paſſages, or Veſſels as Brooks, are chiefly theſe three, *viz.* the Blood, the milkie Humour, and the Lympha. The ſhowering or diſtilling of water may come to paſs from the nervous Liquor which ſometimes ſlowly and inſenſibly ſweats out of the fibres and membranes, and from vapours condenſed within the hollowneſs, or ſome Cavity of the Body. Whether by theſe wayes an Aſcites doth rather, and oftener proceed, we will now ſearch.

Firſt the Blood.

And in the firſt place as to what relates to the blood, it is without doubt, the Serum falling from the maſſe thereof, too much diſſolved, as it doth excite Fluxions and Catarrhs of various kindes, ſo it ſometimes ſtirs up the greater illuvies of waters, *viz.* Dropſical: wherefore when an Anaſarca proceeds altogether from this cauſe, and when oftentimes an Aſcites comes upon that diſeaſe not immediately healed, we may well enough inferr that either diſtemper is induced from a watery humour, every where poured out from the little mouths of the Arteries. Moreover, it is not much improbable, that the Serum of the diſſolved Blood is firſt and ſolitarily poured out of ſome end of the Cœliac and Meſenteric Arterie being open into the Cavity of the Abdomen, and ſo brings on an Aſcites without an Anaſarca going before; and ſo eſpecially if perhaps it happen, that ſcirrhous Tumours, Ganglion's, little ſwellings, or preternatural Concretions of another manner, are firſt raiſed about the Meſentery, the Spleen, the Liver, the Womb, or any of the other bowels of the nether belly: for, becauſe the Circulation of the blood is hindred in thoſe places, that the blood being carryed through the arteries, may be ſome way brought back, the ſerous part being thruſt out from its company, falls into the cavity. For truly it is moſt evidently manifeſted, that it ſo comes to paſs, by this Experiment mentioned by us in another place, *viz.* If in a living animal, the jugular veins being taken up and bound

with a thred, the reduction of the blood be ſtopt, the whole Region of the head ſwells in a ſhort ſpace, with a water between the skin, and clearly hydropical. And truly I have more frequently obſerved that an Aſcites hath followed upon ſecret tumours gathered and raiſed in ſome place in the lower belly: which certainly happens for the reaſon above recited. When the courſe of blood being obſtructed, the watery part is extravaſated in a ſhort ſpace, that humour is not meerly ſerous, but beſides, the nutritious Liquor, ordained to nouriſh all the ſolid parts, is emptyed into the belly: wherefore, while this Region ſwells up, the members are extenuated, and the Lympha taken out from an Aſcites, with heat thickens and grows white, like the white of an Egge.

2, & 3. The milkie and watery humour.

It is alſo very probable, that the milkie Veſſels being burſt aſunder, pour out their humour into the cavity of the abdomen. Truly the moſt renowned *Sylvius* thought this diſeaſe moſt frequently engendred from ſuch a cauſe. And truly as out of the milkie or watery Veſſels, *viz.* one of them or both together, being divided, or opened, we may well ſuſpect the illuvies of water or chyle ſometimes to overflow the bowels of the nether belly; ſo the following obſervation ſeems to confirm the ſame thing. Of late one that had been long ſick of the Jaundies, and in the mean time temperate and abſtemious of drink (to which he was not prompted by thirſt) contracted an Aſcites, increaſed in a ſhort time hugely. After that medicines were adminiſtred in vain, a Paracenteſis is attempted according to the manner of *Sylvius*, with a hollow Needle; out of the orifice, not icterical water, but limpid and thin flowed out abundantly; from whence we may inferre, that hydropic humour flowed not out of the maſs of blood, for then it had been coloured, but diſtill'd out of the lymphic or milkie veſſels into the cavity of the abdomen. We have joyn'd together as akin the ways of the milkie and lymphic Veſſels in propagating an Aſcites, becauſe both veſſels do convey the chyle, or what is analogous to it, to the common Receptacle; and many branches or leading Pipes of either kind, are diſtributed about the bowels of the nether belly; in the mean time, it is not improbable but that a ſolitary fault of either veſſel may ſometimes produce an Aſcites.

As to the other ways of generating an Aſcites, propoſed in the beginning, I am ſcarce induced to think, ſuch an inundation of the belly can eaſily ariſe from the diſtilling of a nervous humour, or by reaſon of vapours there condenſed: although perhaps in a Tympany where the cavity of the abdomen is enlarged, and tranſpiration hindred, the effluvia that were wont to exhale, being forced inwards, are changed into Lympha or water, wherefore for the moſt part an Aſcites is ever conjoyn'd with that diſeaſe.

An Aſcites often the product of the Jaundies.

The immediate or conjunct cauſes of an Aſcites being deſign'd after this manner, which indeed ſeem to be, either a watery humour poured out of the Veſſels bringing Blood, or Lympha or Chyle poured out of the proper paſſages of them both; now we muſt in the next place inquire about the more remote cauſes of this diſeaſe, *viz.* for what occaſions, and after what manner, the veſſels affected of either ſort depoſite their burdens into the cavity of the belly.

The kinds of a Dropſie.

Firſt therefore, that the watery part of the blood ſweats out into the *Aqualiculum* or belly, either the very Blood, or Veſſels containing it, or both together, are in fault. The Blood is in fault, when being depraved in its Craſis it doth not rightly contain within its conſiſtence the conſtitutive parts, but being apt to be diſſolved, it every where rejects its ſeroſities from the mixture; which either it drives out by Urine or Sweat, or permitting them to reſide within, pours them out into the pores of the fleſh, or the cavity of the bowels.

The Deſcription of an Aſcites.

The veſſels bringing blood grow faulty for a ſecond reaſon, for that their extremities or little mouths either are too much looſe, or altogether ſhut up. In the former ſtate the clew of Circulation of blood is not entirely and firmly continued; but the thinner and more crude part of the blood being apt to depart, is ſuffered to flow out near to the interſpaces or inoſculations of the Arteries and Veins; likewiſe on the other ſide, when the courſe of blood is hindred, by reaſon of a tumour or obſtruction of ſome veſſels, their little mouths being throughly cloſed; to this being ſo ſtraitned that a paſſage may be made open by ſome means, that which is thin and watery is extravaſated, and ſent away into the neighbouring places, as we have ſhewed above.

2. In reſpect of the Lymphaducts.

2, & 3. But an Aſcites beginning alone, doth often ariſe, by reaſon of the milkie or lymphatic veſſels being depraved; wherefore ſeeing we ſuppoſe the cauſe of this kind of diſeaſe to be oftentimes conjunct, we muſt enquire, by what means, and for what occaſions, theſe veſſels are wont to be ſo opened or burſt aſunder, that they pour out their liquor into the cavity of the belly.

Firſt

Firſt therefore as to what belongs to the Lymphaducts, theſe veſſels may be in fault after a diverſe manner, but chiefly, either that being obſtructed or compreſſed near their origine, they do not receive the humour, or being burſt about the middle or extream parts, do pour it out into the belly. There are many cauſes and reaſons of effecting of either of theſe, for it may be a viſcous matter obſtructs their beginnings, or glandulous, ſcirrhous, and other preternatural Tumours compreſs them, as alſo a vaſt inundation of Lympha flowing out, moreover vehement motions of the Body, or paſſions of the mind, may burſt them aſunder.

2. The milkie Veſſels, no leſs than Lymphatick, are in danger to be broke, and ſo by pouring out their liquor into the cavity of the Belly, do excite the Dropſie called Aſcites; and truly they are wont to be hurt for the like reaſon, in regard their middle paſſages, or their ends, either are obſtructed by a more viſcous chyle brought into them, or by Phlegme from the inteſtines, or they are compreſſed by Tumours bred in the Meſenterie: for forthwith the chyle entering into the beginnings of the veſſels, and not finding a paſſage, firſt very much diſtends them, and afterwards breaks them. There are many cauſes and occaſions, for which the thicker and obſtructing humours are driven forwards into the milkie Veſſels; for beſides an irregular Diet, and for the moſt part from meats hard to be digeſted, this evil is frequently cauſed by too much drink, or immoderate exerciſe immediately after Food, alſo from cold drink while the Bowels are very hot; for ſo the paſſages of the Veſſels before gaping are ſuddenly ſhut, and afterwards more narrowly cloſed, wherefore the chyle ſticking within their ſtraitned chanels, doth throughly fill and obſtruct them in a ſhort ſpace. *3. In reſpect of the milkie veſſels.*

As to what belongs to the differences of this Diſeaſe, beſides them already cited, *viz.* that it comes after an Anaſarca, or comes ſolitary; that this alſo is manifold and after a diverſe manner, according as the Veſſels bringing blood, or water, or milk, are found in the fault; Moreover we obſerve, that the Dropſie called Aſcites ſometimes proceeds from a meer watery humour filling and diſtending the parts of the nether belly; but ſometimes there happens to this deluge an extenſion of the membranes, or inflations made by the irregularities of the inmate ſpirits, and ſo they do encreaſe the ſwelling of the Abdomen; and in this caſe a certain Tympanites comes upon an Aſcites, even as more frequently on the contrary, this is the offſpring of that. *The differences of this diſeaſe.*

Moreover, in an Aſcites meerly watery, ſometimes the Lympha only fluctuates within the Cavity of the Abdomen, ſo that in the mean time the bowels being ſoakt in it, continue ſtill entire, and little or nothing encreaſed in their bulk; but ſometimes beſides the inundation of the Lympha in the hollow of the belly, the blood being ſlowly circulated there, and almoſt ſtagnating it is much diluted with water; Moreover the Parenchyma of the bowels, and the ſides of the Veſſels and of the membranes, and chiefly the Glandules every where numerous, being moiſten'd, do ſwell with the flowing water, and ſo the tumour of the belly conſiſting as it were of many pools of water and mooriſh Contents, riſes into a vaſt bulk.

The Prognoſtick of this Diſeaſe, is always ſuſpected and accounted of an ill omen: for none of the vulgar but will pronounce the obſtinate tumour of the belly to be very dangerous and difficult to cure: If any ſeem to be affected with a Dropſie, or a Conſumption, with them preſently the next queſtion is, Who ſhall be his heir. *The Prognoſtick.*

An Aſcites beginning after an Anaſarca (which proceeds commonly from the whole maſs of blood being pour'd forth into ſeroſities, and ſweating them out of the little mouths of the Arteries into the cavity of the Abdomen) is accounted of eaſier cure, or at leaſt of more promiſing hope, than that ſolitary diſeaſe coming from tumours about the bowels, or from the Lymphatick or lacteal Veſſels being burſt aſunder; for as well the conjunct as procatarctick cauſe of the former Diſeaſe, oftentimes is uſed to be removed wholly, or in part; but in the other caſe, both for the moſt part exiſt incurable. A reddiſh Urine, lixivial, and little, in an Aſcites is of ill ſignification, for 'tis a ſign that the maſs of blood, being repleated with a ſcorbutick Salt and Sulphur boyled together, is too much bound up in its ſubſtance; inſomuch that it doth not well ſeparate the feculencies, nor diſcharge them by fit and convenient Sinks, which notwithſtanding it doth evilly diſpoſe by conſtraint into the Cavity of the Belly, forasmuch as it is hindred in its Circulation in the very ſame place. For in an Aſcites the blood is not always diſſolved as in an Anaſarca, but ſometimes appears too much compacted in its temper, yet ſo, that the ſalt Serum being denyed to the pores of the skin,

and to the Urinary paſſages, by reaſon of the Obſtructions of the bowels is forced to break out within the abdomen.

If in an Aſcites, by a Purge taken, the waters are evacuated with eaſe plentifully by ſtool, and from thence the ſwelling of the belly is ſomewhat diminiſhed, we are not to deſpair of the Cure; but if Purgers bring out little or nothing of the Serum, or Lympha, and thence by reaſon of the Nervous fibres being irritated, and driven into extenſions or inflations of the bowels and membranes (as it uſes frequently to be) the belly ſwells the more, and grows like a Drum, we may expect only a fatal event of the Diſeaſe.

The Cure of an Aſcites. About the curing of the Dropſie called *Aſcites* it behoves us chiefly to conſider by what ways the waters heaped within the abdomen, may be thence brought out, and evacuated, for ſuch an evacuation ought to be attempted only by poſſible ways. And here preſently is to be obſerv'd, that the remedies uſed for Hydragogues according to the ordinary practice of Medicine, intend to accompliſh that end by purging, by Urine, by Sweating, and by inſenſible tranſpiration: In ſome caſes of the Sick you ought to proceed by this way, and in other caſes rather by that way, or another, and if none of theſe ſeem feaſible, or ſucceed well, let mature conſultation be had for a Paracenteſis. It will be worth our labour to weigh every of theſe kinds of Medicines, and the reaſons of every one, and the manner of their operations, and with how much vertue Hydragogues are endowed.

By what and how many remedies the eduction of the water is to be endeavoured.

Firſt by purging. Firſt, therefore as to what relates to purging, we have in another place ſhewed that, from the irritation of the Phyſick made in the belly and guts, as well the Contents and winde of theſe bowels, as moreover the humours driven into their Coats and Glandules, and which are heaped up in the Veſſels and Pipes of the neighbouring parts, are diſquieted, and partly ſtreined into the paſſages of the guts, and partly returned into the maſs of blood; inſomuch that the tumour of the abdomen ariſing from the ſtoppage, and as it were a wateriſh affection of thoſe kind of Parts, is often abated by Purgatives ſeaſonably adminiſtred, and ſometimes wholly removed; but it doth not ſo ſucceed when it proceeds from a Lympha fluctuating within the cavity of the abdomen, or from an inflammation of the membranes, or from a tympanitic extenſion: becauſe Hydragogues do little or nothing bring out thoſe waters, and if they be of the ſtronger ſort, they encreaſe this paſſion and exaſperate it by inflaming the part.

Catharticks are either Vomits or Purges. Catharticks uſed for Hydragogues, are either Vomits, or Purges; they exert their power in the ſtomach, and theſe rather in the Inteſtines; inſomuch that they powerfully provoke and twitch the Nervous fibres; and together pour forth the blood and nervous liquor by a certain ſeptick force, and do cauſe the ſerous humours wherever impacted to be ſtirr'd, and do cauſe them plentifully to be ſent away by the paſſage granted. Either are reckon'd of a various kinde, *viz.* either ſimple or compound, gentle or ſtrong, by the Ancients as well as by the Moderns; ſome of which that are moſt chiefly noted, we will here briefly obſerve.

1. *Emetick Hydragogues*, chiefly famous, are Gambugia, Eſula, Spurge, and their ſeveral Preparations, as alſo the *Hercules* of *Bovius*, and the *Pilulæ Lunares*.

The chief medicines of either kinde. 2. *Purgers* are Elder, and Dwarf-Elder, Soldanella, Gratiola or Hedge-hyſſop, the Juice of Orris, and Elaterium. We will briefly preſcribe ſome methods either of preparing or compounding or adminiſtring each of theſe.

1. Gummi guttæ. 1. *Gambugia*, firſt an *Indian* Medicine, being from thence brought by our Countrey-men, from the Painters Shops coming to the Apothecaryes, began to be in uſe, and is much magnified for purging out ſerous humours. But foraſmuch as taken by it ſelf it vehemently diſturbs the Stomach, and often weakens it, therefore, that its outragious and violent vomiting force may be ſomewhat abated, there are divers ways of its Preparation invented; but truly it is beſt corrected with an acid Spirit, or with an alcalizate Salt, or by throughly mixing and correcting it with aromaticks.

Its various Preparations. *Adrian à Mynſicht*, extolls the magiſtery thereof, which is made by a diſſolution in Spirit of Wine, and after drawing it off, and precipitating it with Spring-water; alſo diſſolving it with Spirit of Wine vitriolated, and with Tincture of Roſes, and red Sanders, and after by evaporating it: others prepare it with the fume of Sulphur after the manner of Scammonie ſulphurated; others grinde it on a Marble, moiſtening it with Oyl of Cinnamon, or Cloves, or other chymical Aromaticks. I uſe moſt the *Solution thereof made with a tincture of Salt of Tartar, the doſe from* 15 *drops to* 20 *or* 30.

Take

Take of Gum-gutta, gr. 6. Mercurius dulcis gr. xv. Conſerve of Violets, a dram and a half, make a Bolus. *The forms of Hydragogues prepared thereof.*

Take of Gambugia twelve grains, Salt of Wormwood fifteen grains, Oyl of Mace one drop, Conſerve of Damask-Roſes one dram, make a Bolus: and it is wont to be given with Tartar vitriolate, or Cream of Tartar, and powder of Rhubarb.

Take of Gum-gutta ſulphurated, or vitriolated, fifteen grains, Cream of Tartar half a ſcruple, Extract of Rhubarb one ſcruple, Oyl of Cinnamon, gut. 2. make 4 Pills.

Lately, a woman afflicted with a moſt painfull Aſcites, and moſt deſperate, as it ſeemed to me, the enſuing Medicine being taken for 6 days ſucceſſively, ſhe began to be much better, and in a ſhort time afterwards recovered her health entirely.

Take of powder of Gum-gutta twelve grains, Oyl of Cinnamon one drop, with ſyrup of Buck-thorn, make a Bolus, the doſe daily to be augmented, aſcending from twelve grains to twenty.

Take of our Tincture of Gum-gutta one ſcruple, water of Earth-worms one ounce, Syrup of Rhubarb half an ounce, mix them, and let it be taken with government.

2. Whereas there are ſeveral ſpecies of Spurge, or *Tithymalus*, and all of them work more violently either by Vomit or Stool, by reaſon of the notable provocation they make in the bowels; and for that cauſe do abundantly bring out ſerous humours; yet by reaſon of the too outragious force of many of them, the leſſer Spurge for the moſt part only is now in uſe, and the preparations thereof moſt of all magnified are, the powder of the bark of the Roots, and the Extract, and we think fit to adde the tincture inferiour to none of the reſt. 2. *Spurge. The Preparations thereof.*

Take of Spurge with the Roots cleanſed four handfuls, Lignum-Aloes, and Cloves, of each one dram, bruiſe them and boyl them in four pound of Spring-water, to half, the ſtrained Liquor clarifie by ſeparation or ſettling in a long glaſs, afterwards evaporate the clear liquor in a Bath heat, to the conſiſtence of an Extract, the doſe one ſcruple.

Take of this Extract half an ounce, pour upon it into a matraſs of the Tincture of Salt of Tartar 6 ounces, digeſt them in a Sand-bath to the Extraction of a Tincture, the doſe from 20 drops to 30 in a convenient vehicle. *Forms.*

Take of the Powder of Spurge from ſeven grains to ten, Cinamon half a ſcruple, Salt of Tartar eight grains, mix them together in a glaſs mortar, give it by it ſelf or mixed with a fit Conſerve, or Syrup, make a Bolus or Pills.

2. *Precipitate* of Mercury with Gold, or the *Hercules* of *Bovius* which is much extolled by the Author for curing Dropſies; it is deſcribed in a former Treatiſe in the Chapter of Vomits, and the manner of preparing, and the working thereof, and the Reaſons are there delivered. This Medicine, inaſmuch as it twitches the ſtomachical fibres by its acrimony, and pours out the blood by reaſon of the mercurial and ſalt particles, cauſes or ſtirs up a fierce Vomit, and thereby cauſes the ſerous humours, violently ſtrained into the Cavities of the bowels, to be ejected. *The* Hercules *of* Bovius.

3. The Pills called *Lunares* produce the ſame effect in like manner, by reaſon of the vitriolate particles of Silver ſharpened with other ſaline menſtruums, *viz.* by wrinkling of the fibres of the Bowels very much, they force the ſerous humours to be ſtrongly ſtrained into their paſſages, and ſo to be evacuated. *Pilulæ Lunares.*

A Solution of Silver made in Stygian water, and well cleanſed, and by a little evaporation is reduced into pleaſant Cryſtals, which by themſelves (or with an addition of Salt Nitre to abate the fierceneſs of the Lunar Vitriol) are made into Pills with crums of bread: the doſe is one Pill, ſometimes two or three, reſpecting the ability of ſtrength and working. Medicines of this kinde are exhibited ſometimes with ſucceſs in a ſtrong conſtitution, and bowels ſtrong, and a good habit; but they are ſcarce ever conveniently or rarely without prejudice taken by tender and cachectical perſons.

Hydragogues meerly or chiefly purging, are either of a more mild ſort, as Elder, Dwarf-Elder, Soldanella, and juice of Engliſh Orris, which ſeldom being adminiſtred by themſelves, do want the ſtirring up of ſharper Medicines, and on the other ſide they blunt their too much fierceneſs; or they are of a ſtronger ſort, as *Gratiola* or Hedge hyſſop, Jallap, and Elaterium. *Purging Hydragogues.*

The

Elder and Dwarf-Elder. The ſeeds or grains of Elder and Dwarf-Elder being dryed, are reduced into a powder, which being taken to the weight of one dram, doth gently bring forth ſerous humours by ſiege; Water and Spirits are diſtill'd of the juice of either ſorts of Berries fermented, alſo Robs and Syrups are made of them; which with many other Preparations of thoſe Vegetables, are much magnified for all hydropical Diſtempers.

Soldanella. *Soldanella* and *Gratiola*, are rarely uſed by themſelves in our age, neither are any neat and very efficacious Medicines prepared out of thoſe Simples, they are frequently mixt with certain other Hydragogues, and chiefly are ingredients in compounding Apozems.

The juice of Orris. The Juice of *Engliſh Orris* is a very profitable Medicine, and becauſe to be eaſily procured for the poor, is the more to be eſteemed: It is given from ſix drams to an ounce and a half, or two ounces, either by it ſelf in a fit vehicle, or with other things appropriated thereunto. Jalap is a moſt known Medicine againſt every Dropſie, and common enough. Any one of the common people ſuffering under that diſeaſe, preſently takes of the powder of the root of Jalap a Pennyworth, mixt with Ginger and White-wine, and the deſired effect doth frequently follow this remedy uſed with intermiſſion.

Elaterium. *Elaterium* is rightly eſteemed the moſt powerful Hydragogue, for that it moſt painfully provoking the ſplanchnick fibres and together melting the blood and humours by a certain corroſive force, compells whatſoever ſeroſities the Coats of the Bowels, Membranes, Veſſels, alſo the Glandules, and fleſh do contain in themſelves, to be poured out into the cavities of the Stomach and guts: by which Medicine happily working, the aſſwaging of the Abdomen doth ſometimes ſucceed. Truly this is the chief weapon of the Empirical Magazine againſt any Aſcites; which they notwithſtanding uſing in all caſes, do oftener adminiſter to the hurt than benefit of the Patient: the doſe is from three grains to ten or fifteen, taken either by it ſelf, only with correcting ſpices added, or it is given with other hydragogues in form of a Powder, Pills, or Electuary. The tincture and eſſence of it are extracted with Spirit of Wine, or with tincture of Salt of Tartar.

The forms of Hydragogues. Theſe are the chief ſimple Hydragogues, from which being prepared with the addition of others, many compounded ones as well Magiſtral as common in Shops are made, and are every where in uſe; moreover, very many more might be preſcribed extemporarily, as occaſion ſerves. Of theſe we will here annex a few more ſelect forms, and chiefly thoſe that are taken in the form of Potions, Powders, Electuary and Pills.

A Tincture. *Take of Dwarf-Elder, Engliſh Orris, of each an ounce and half, leaves of Soldanella and Gratiola, i. e. Hedge-hyſſop of each one handful, Aſarum, and Aſſe Cucumber-roots of each two ounces, roots of leſſer Galangal ſix drams, choice Jalap half an ounce, Elaterium three drams, Cubebs two drams, ſhred and bruiſe them, and pour upon them three pound of ſmall Spirit of Wine tartarizated, digeſt it ſtopt cloſe in Sand for two days, ſtrain it clear and depurate it by ſettling. The doſe from two ſpoon-fuls to three, in a convenient vehicle.*

Powders. *Take of Elaterium, Soldanella, Ginger, of each one ſcruple, Galangal, Cloves, Cinamon, of each half a ſcruple, Salt of Tartar fifteen grains, make a powder for two doſes.*

Take powder of Jalap one dram, Ginger one ſcruple, Cream of Tartar 15 gr. make a powder to be given in a draught of White-wine.

Pills. *Take of Rhubarb one ſcruple, Elaterium 5 grains, Tartar vitriolated half a ſcruple, Spicknard three grains, with Syrup of Buckthorn make four Pills.*

Take of pill Aloephanginæ half a dram, Elaterium half a ſcruple, Oyl of Cloves gut. 3. make four Pills.

Bontius hydropick Pills are given from half a ſcruple to half a dram, prepared thus:

Take of Aloes two drams and a half, the preparation of Gum-gutta one dram and a half, Diagridium corrected one dram, Gum Ammoniacum diſſolved, one dram and a half, Tartar vitriolated half a dram, make a maſs, and form it into Pills.

Electuaries. Certain hydragogue Electuaries are now every where in uſe and celebrated by practiſers. Of which ſort are, 1. One deſcribed by the renowned *Sylvius*, and the other by *Zwelfer*. This following pleaſes us.

Take

Take of Reſine of Jalap two drams, Tartar Vitriolate one dram, Extract of Rhubarb two drams, of Spurge a dram and a half, leſſer Galangal one dram, beat them in a mortar, and laſtly adde of Conſerve of the flowers of Engliſh Orris, four ounces, and with Syrup of Peach-flowers make an Electuary, the doſe from half a dram to a dram and a half, or two drams.

I might here ſet down or deſcribe many other purging Hydragogues, but Catharticks do not always cure an Aſcites, yea often-times exaſperate it, and (if they be long continued) render it incurable; hence it is neceſſary to have recourſe to other Remedyes for the Cure of this diſeaſe. Wherefore, let us next enquire whether Diureticks do here profit or not? *2. Diuretick Hydragogues.*

And truly any one may eaſily think that Remedies moving Urine conduce very much for draining waters out of every place or cavity of the body. In truth it is manifeſt by frequent experience, theſe do often cure an Anaſarca before any other Remedy; let us ſee what they may effect for the emptying the Cavity of the Abdomen.

As to this it firſt appears, that there is no paſſage immediately open from an Aſcitick pool to the Reins, although contiguous; but that whatſoever waters are transferred from hence thither, muſt of neceſſity firſt be drunk up into the maſs of blood, and from thence be poured out of its boſom into the ſink of Urine; and truly it is but a little which the gaping little mouths of the veins about the ſuperficies of the bowels can receive (if perhaps they are open at all) and Diureticks can but effect this one thing, that by pouring forth the blood, and forcing its ſeroſities more plentifully to the Kidnies, they cauſe the waters fluctuating in the belly to be allured to it being ſo emptyed; in the mean time there is no leſs danger, leſt Diureticks being unſeaſonably adminiſtred, while they diſſolve the blood too much, they conſtrain the ſerum to depart into the ſeat of the Aſcites, more than into the Reins, and ſo rather augment than remove the inundation of the belly. For that it ſometimes ſo happens, I have often found by experience; wherefore when Diureticks are preſcribed to cure an Aſcites, we muſt chiefly provide againſt ſuch a contrary effect. For this reaſon indeed Aſtringents and Corroboratives are always mixt in Remedies for the Dropſie (founded on experience, and the Authority and Practice of the Ancients) not that ſuch (as is commonly ſaid) do confirm the Tone of the Liver, but conſerve the temperature, and mixture of the blood, leſt it be wholly diſſolved by too great a fuſion. Wherefore in an Aſcites which chiefly or in part happens by reaſon of the frame of the bowels and veſſels, and chiefly the Coats, Glandules, and their little ſtrings, and their interſpaces being ſtuffed by a ſerous humour, and therefore very much ſwell'd up, as Catharticks ſo alſo Diureticks profit, and are frequently taken with ſucceſs; foraſmuch as by the uſe of theſe the maſſe of blood being emptyed (the ſerum being more plentifully derived to the kidneys) doth eaſily receive unto it ſelf thoſe waters every where ſtagnating about their little mouths, and conveys it towards the urinary ſink: but on the contrary, in a meer Aſcites where the heap of waters do overflow the Cavity of the Belly, the Textures of the bowels being free from the ſerous ſtuffing; Diureticks are given in vain, or incommodiouſly; inaſmuch as they expreſs nothing from this Lake of the belly, and moſt frequently by diſſolving the blood more impetuouſly drive together the waters apt to be inſtill'd there. *What Profit they bring in an Aſcites.*

Not all Diureticks of every kinde are equally convenient in an Aſcites, neither ought they indifferently to be adminiſtred; for we muſt obſerve, the affected in this diſeaſe for the moſt part make a little, reddiſh Urine, and as it were lixivial; which truly is an indication that the temperature of the blood is too much bound in them, by reaſon of the fixt and ſulphureous Salt exalted and combined together: and therefore that the Serum is not duely ſeparated within the reins; which notwithſtanding is ſhook off about the windings of the obſtructed bowels, and ſo is depoſited in the Cavity of the Belly. Wherefore in this Caſe it will be convenient to drink only thoſe things to excite Urine, which ſo reſtore and amend the Conſtitution of the blood, that the enormities of the fixed Salt and Sulphur being taken away, the ſerous part might be ſeparated within the reins, and more plentifully diſcharged; for which purpoſe, not acid or lixivial things, but thoſe endowed with a volatile Salt are appointed. For I have often obſerved in Patients of that kind, when the Spirit of *With what choice and difference they ought to be adminiſtred.*

of Salt, and other acid drops of Minerals, and when the diſſolutions and Deliquiums of Salt of Tartar, Broom and other things, have done more hurt than good, that the Juice of Plantane, Brooklime, and other Herbs abounding with a volatile Salt, have much helped, as alſo the expreſſions of Millepedes: for the ſame reaſon Salt of Nitre throughly purified or Cryſtal Mineral doth often profit. Forms of Medicines more accommodate for this uſe are extant in our former Treatiſe, where, *viz.* examples of Diureticks are deſcribed, in which both volatile and nitrous Salts are the Baſis. Moreover, hither ought to be referred the notable experiment, by which *Joannes Anglus* affirms himſelf often to have cured the Aſcites from a hot cauſe, which Medicine alſo that expert Phyſitian Dr. *Theodore Mayern* was wont to magnifie and preſcribe in the like caſe.

John Engliſh *his Empyrical remedy.*

Take of the juice of Plantane and Liverwort, and fill an Earthen pot to the top, which being ſtopt cloſe, put in a hot Oven after the Bread is drawn, and make a little fire on the ſides of the pot to continue the heat of the Oven; after it is ſo boyl'd ſtrain it, and being ſweetened with Sugar, drink of it Morning and Evening, and it cures. In imitation of this I have often with ſucceſs preſcribed as followeth.

Take of green Plantane-leaves four handfuls, Liverwort, Brooklime, of each two handfuls, bruiſe them together, and pour upon them half a pound of ſmall compound Radiſh-water, or other appropriate Magiſtral, expreſs it ſtrongly, the doſe three ounces three times in a day.

How beneficial Diaphoreticks are in an Aſcites.

Although Diaphoreticks are moſt efficacious in an Anaſarca, yet in an Aſcites they are rarely or not at all uſed: for being unſeaſonably offered, they impreſs oft-times great hurt on the Patient without any avail; foraſmuch indeed as by heating the blood, they cauſe the fluctuating waters to grow hot, and as it were to boyl in the hollowneſs of the belly; ſo that the ſpirits and humours are diſturbed by vapours raiſed from thence; and ſo a diſorder of all the functions follows, and the very bowels being as it were boyled, are much prejudiced. Moreover from ſweating unadviſedly inſtituted, the blood being forced into a fuſion and precipitation of the Serum, throws it off the more into the neſt of the Aſcites. Wherefore when ſome preſcribe fomentations, and liniments, and bathing, to be applyed to the ſwelling Paunch of the Belly, for the moſt part it turns to the worſe in ſuch Patients; for beſides a little Feaver, a Vertigoe, fainting of the ſpirits, and other ill ſymptomes of the brain and heart, being moſt frequently ſo raiſed, even the belly alſo doth from thence ſwell the more: foraſmuch as the Blood being agitated and poured out, depoſits in that place more largely the Serum; and for that cauſe the mouths of the Veſſels are more looſened and opened, ſo that they may more readily let fall water prone to depart from the maſs of blood. But the Remedies which are chiefly wont to be adminiſtred with ſucceſs near the places affected (when a Cure is intended without a Paracenteſis) are Clyſters and Plaiſters.

Glyſters and Plaiſters.

The former draw the Serum out of the Veſſels and Glandules of the Guts and Meſentery without fuſion of the whole maſs of blood, (which the ſtronger purging Medicines do excite,) which being ſo emptyed do imbibe a little the extravaſated Lympha. For this purpoſe the enſuing Clyſter, wont to be preſcribed by us in this caſe, is moſt fit, in regard it contracts the inteſtinal fibres together, and draws the Serum imbibed by the blood, or contained formerly therein, towards the Reins.

Forms thereof.

Take a pint of Urine of a ſound man that drinks Wine, Venice *Turpentine diſſolved with the Yolk of an Egge, an ounce and a half, Sal Prunella one dram and a half, make a Clyſter, which repeat daily.* Sometimes Plaiſters yield help in an Aſcites, yet let them be ſuch, as by a certain reſtringent and comfortable virtue ſtrengthen the bowels and bind together the mouths of the Veſſels, leſt they too much ſpue out their ſeroſities: for this purpoſe, I uſe to apply the Plaiſter *Diaſaponis* with ſucceſſe. Or,

Take of the Plaiſter of Minium, Paracelſus *Plaiſter, of each what ſuffices, make a Plaiſter to be applyed to the Abdomen.* If this diſeaſe is accompanyed with a Tympanie, Epithemes of another manner are fit, as we ſhall hereafter declare.

The great and moſt preſent remedy of an Aſcites, is, that the waters may be drawn out by a Paracenteſis being made; which adminiſtration however doth not oftner cure the diſeaſe, than kill the Patient; wherefore there is need of exact caution

to

to whom, and at what time of the diſeaſe it ought to be adminiſtred: to perſons of an ill habit, who have been long ill, in whom the conformation and temper of the bowels is wholly depraved, it will be in vain to have the Lympha drawn out by the Paunch being pierced; for thereupon immediately the Spirits faint and the ſtrength is diſſolved, and after a while a new illuvies of the morbific humour ſucceeds. But thoſe who being formerly of ſound bowels, and healthful enough, as to other parts, when they fell into an Aſcites from ſome great and evident cauſe, as we are not at firſt preſently to make a Paracenteſis, ſo neither if it be needfull ought we to deferre it too long: for an incorrigible depravity of the Bowels is contracted by a longer delay, while they remain a long while drowned, and as it were boyled in water.

When and to whom a Paracenteſis is convenient in an Aſcites.

It is beſide our purpoſe to deſcribe here the adminiſtration of a Paracenteſis, whether it be done after the ordinary manner, or by a hollow Needle according to *Sylvius*; this part of Chirurgery, as dangerous, when Phyſitians ſeldom preſcribe, yet Quacks and Empiricks raſhly and unluckily eſſay it, Artiſts not being conſulted: we will relate here for concluſion the Hiſtory of a true and huge Aſcites, lately cured without any Paracenteſis.

A young Woman wife to a Merchant, being ſlender and proper, while ſhe gave ſuck to her Child, to encreaſe her milk day and night did immoderately guzzle one while plain Ale, another while Poſſet-drink. After having uſed this kind of dyet for a fortnight, ſhe contracted a vaſt Aſcites in a ſhort time, the beginning whereof ſhe was not in the leaſt ſenſible of; for her Abdomen being great with water fluctuating within, did much ſwell up, and its bulk when ſhe turned from one ſide to the other, fell without the Ileon and borders of the reſt of the body: when in the mean while the fleſh of all her Members was very much conſumed, that ſhe ſeemed no leſs in a conſumption than a Dropſie.

A hiſtory of a cure.

The Child being weaned, and a better courſe of Diet being appointed, ſhe betook her ſelf to Medicines, and took in the firſt place the more mild Hydragogues, as well purgative as diuretical, but without any advantage; alſo ſhe was worſe after every purge; but being committed to our care, and almoſt deſperate, I handled her after the enſuing method.

I preſcribed theſe Medicines, for the moſt part forbidding Ale, and any potulent liquor (medicines excepted.)

Take of the leaves of Plantane, Brooklime, Clivers, of each 4 handfuls bruiſed, and pour upon them of water of Earth-worms and Rhadiſh compound of each three ounces, preſs them, take it twice a day, viz. *at Eight in the Morning, and at Five in the Afternoon. She continued long in the uſe of this Medicine, but did ſometimes vary the Compoſition, ſometimes changing the herbs, ſometimes the Liquor poured on them.*

Take of the reddeſt Tincture of Salt of Tartar an ounce and a half, ſhe took 20 drops at night, and early in the morning, in two ſpoonfuls of the following Julep, drinking ſeven ſpoonfuls after it.

Take water of Elder-flowers, Saxifrage, of each ſix ounces, water of Snails, Earth-worms, and Rhadiſh compound, of each two ounces.

She wore a Plaiſter of Minium and Oxycroceum upon her Belly.
The following Clyſter was given firſt daily, afterwards every two or three days.

Take Urine of a healthy man one pound, Turpentine diſſolved with the Yolk of an Egg an ounce and a half, Sugar an ounce, Sal Prunella one dram, make a Clyſter.

By the conſtant uſe of theſe things her Belly aſſwaged within a fortnight, but her fleſh daily waſting, a Conſumption was threatned. Wherefore, going into the Countrey to avoid this, ſhe drank Aſſes milk; by the benefit of which Nutriment and of purer Air, continually taking the above-mentioned Medicines, ſhe recovered her entire health within three or four weeks, and lives yet in health.

SECT. II. CHAP. IV.

Of a Tympanie.

A Tympany not properly a kind of Dropſie.

A Tympany vulgarly, although not properly, is eſteemed a kind of Dropſie, from which rank, *Proſper Martianus* alleadging the teſtimony of *Hippocrates*, rejects as well this Diſeaſe, as an Anaſarca. But the former infeſting the region of the Abdomen, and raiſing it up into a bulk, now comes under conſideration next after an Aſcites, (to which it is ſomething a-kin): where firſt of all it is obvious, that this Diſeaſe as it is moſt difficult to cure, ſo alſo to be known; for although its outward form, *viz.* a ſomewhat hard ſwelling of the belly, very ſtiffe and yielding a ſound like a Drum, upon touching it, is evidently perceived by many ſenſes together; notwithſtanding what may be the morbifick matter inducing that Tumour, or after what manner it is generated in the belly, or from what place it comes thither, is altogether unknown: therefore thoſe who have a Tympanie, as though they were big with winde, are ignorant both of the manner and time of its conception. Truly I therefore judge the nature and cauſes of this diſeaſe to lye concealed, becauſe whereas its firſt beginnings are not obſerved, it ſuddenly augments prodigiouſly; ſo that they who are affected, do ſcarce ſooner perceive themſelves to be ſick, than that they are become almoſt incurable. Moreover, a Tympanie, its ſtation being accompliſhed, degenerating into an Aſcites, or rather procuring it to its ſelf, ſeems to loſe its own nature; and truly after death Anatomical inſpection ſcarce diſcovers any thing more in bodies dying with a Tympany, than with an Aſcites. But that many Phyſical Authors do readily declare this Diſtemper to be raiſed by wind encloſed within the cavity of the abdomen, doth not at all ſatisfie a mind deſirous of the truth; becauſe it ſeems altogether improbable that winds ſhould be produced ſo ſuddenly, and in ſo great plenty in that place; or admit they were, that ſo hard, unmovable and conſtant a tumour ſhould be raiſed.

Wherefore its cauſe is occult.

Commonly aſcribed to Winde.

Authors do not agree about the ſeat of the Windes.

Moreover they do not eaſily agree concerning the ſeat of the diſeaſe, where the wind is ſuppoſed to be included; for ſome affirm that this place is determinate in the concave of the Peritonæum, and by the convex ſuperficies of the Inteſtines, and other bowels of the lower part of the belly; but after what manner ſuch a heap of winds can be therein collected, in my opinion it cannot be manifeſted by any reaſon, example, or parallel inſtance. Beſides, if the caſe were ſuch, it might be more eaſily cured by pricking, than an Aſcites by a Paracenteſis; which yet I never heard accompliſhed. *Helmont* reports a ſtinking wind was vented by a Paracenteſis, in one eſteemed Hydropick; that ſuddenly his abdomen ſunk, and the man dyed immediately. But *Platerius* and *Smetius*, no leſs worthy of credit, do affirm, *They diſcovered in ſome who were thought to have the Tympanie, and diſſected after death, that no wind broke forth out of the hollow of the belly, neither that it fell, but that eſpecially the ſmaller guts being diſtended, and ſtrutting with winde, burſt out ſo, that they could not be put up again into the ſame belly.*

Not without the guts in the cavity of the Abdomen.

Nor within their paſſages.

But truly neither is this obſervation an argument to me, that the cauſe of the diſeaſe (of which we treat) remains within the Cavities of the guts, and that the winds accumulated in that place, do often or moſt of all raiſe a Tympanitick ſwelling of the belly. For beſides that, a diſeaſe taking riſe from ſuch an occaſion, would not be ſo immovable, and frequently incurable; moreover, I am induced to think, that the Inteſtines are not ſo greatly dilated by winds ſhut up in them, but that they often of their own accord ſwelling out, give occaſion to thoſe winds conſequently and ſecondarily to be produced, by which the ſpaces enlarged might be filled, as we ſhall by and by more clearly demonſtrate.

Not between the coats of the bowels.

But what is aſſerted by others, that the windes which are the cauſe of a Tympany, are engendered among the Coats of the Meſentery, and Guts, ſeems yet much more improbable; becauſe when there is no cavity in that place preexiſtent, after what manner can the winds ſo tear thoſe parts and ſeparate them from one and another, ſo that from ſuch formed Denns, the whole region of the Belly ſhould grow into ſo vaſt a bulk by accumulated windes there laid up? Certainly ſo many and ſo great divulſions could not be made without continual torment and moſt ſharp pains.

Where-

Wherefore, omitting theſe opinions already ſpoken of about a Tympanie, let us proceed another way to the more aſſured ſearching out its Pathologie; *viz.* by thorowly weighing by what means, and by what evident cauſes, the Abdomen is wont to ſwell up. Wherefore, we advertiſe there are four kinds of things contained, from which proceeds a tumour in the nether Belly of the living, (why the Abdomen ſwells in dead perſons, the reaſons follow hereafter) which kinds are, ſolid, humid, wind and Spirits. *By what and how many cauſes the Belly ſwells.*

Firſt, It is obvious enough, that the inward tumours of the bowels, *viz.* ſcirrhous, ſtrumous, cancrous and glandulous, and ſome perhaps of another kinde, when they riſe to any notable bulk, do ſwell the whole belly; yet in the mean time as long as they are ſimple, and new, they may be perceived and circumſcribed by the touch; yet afterwards growing inveterate, they cauſe other evils to the neighbouring parts, yea over the whole Region of the Abdomen. Truly theſe as they are ſometimes the procuring cauſe of an Aſcites, ſo of a Tympany from the beginning, to which afterwards for a complement of either diſeaſe, another conjunct cauſe gains acceſs, *viz.* an illuvies of waters, or an irregularity of the Spirits. *1. From tumours of the Bowels in that place.*

Secondly, a watery humour gathered within the Cavity of the abdomen, or being impacted in the membranous or glandulous parts thereof, frequently produces an Aſcites, the reaſons whereof, and the manner of its coming to paſs, are at large ſet down before. *2. From waters gathered as in an Aſcites.*

Thirdly, Winds within the bowels of Concoction being raiſed from crudities, ill concoction, or fermentation of heterogeneous humours, do frequently puff up the Cavity of the guts, and for the moſt part produce a ſhort and tranſitory tumour of the belly. For the fermentation of the Juices ceaſing, and eruption of wind being procured, immediately ſucceeds an aſſwaging of the Belly. To this cauſe, both the Colick and Tympanie, not only by the vulgar but by Phyſicians of great note are imputed; but in our judgement, when it is ſolitary it produces neither of theſe diſtempers. *3. From winds.*

Fourthly, There yet remains another ſudden, and vaſt ſwelling of the belly, which the animal Spirits, (not for nothing ſtyl'd by *Hippocrates* violent) ſeem to procure. For when theſe in heaps, and inordinately, ruſh into the nervous fibres belonging to the bowels of the lower belly, preſently the parts that theſe weave together are cauſed to be puffed up, and extended every where round about. For truly, from this cauſe (as we have often ſhewed in another place) a ſwelling, and as it were a tympanitical puffing up of the whole abdomen, as well in the Colick as in Hyſterical fits vulgarly ſo called, doth often happen. And truly theſe diſtempers are ſo allyed to a Tympany, that they frequently end in it; for I have oft obſerved, that thoſe who have been obnoxious to the Colick and hyſterical paſſion long and grievouſly, unleſs they receive cure, do become Tympanitical. And then the greateſt of the difference will be, that the ſwelling of the belly, which before was a wandring Symptom, and ſoon paſſing over, at length grows to be a fixt and permanent diſeaſe. *4. From the inflation of the Fibres, by reaſon of the Spirits being diſturbed.*

Wherefore, it ſeems material in this Caſe, to accommodate the Ætiologie of thoſe paſſions delivered by us in another place, to unfold the Nature and Cauſes of this preſent maladie.

Which truly will not be of any great buſineſs or difficulty. For ſuppoſing (what we have in another place more largely ſet down) the extenſions and inflations of the membranes and hollow bowels, take their origine from the impetuous invaſions of the Spirits into the nervous fibres (of which they are interwoven) it will be obvious enough to conceive even a Tympanie to be produced from ſuch a cauſe, but being more fixt, and longer, or unceſſantly in the act; into the reaſon of which difference, we will by and by inquire. *An Affection of what ſort a Tympany is.*

In the mean time I am induced to believe a Tympanie not to be ſtirred up from winds ſhut up within, or without the Cavity of the guts, (for ſuch an accumulation of winds in thoſe places, is an effect, but not a cauſe of this diſeaſe) but that it does ariſe, inaſmuch as the animal Spirits, in the bottom of the belly, belonging to the membranous bowels, being forced into diſorder by ſomething incongruous, do tumultuouſly ruſh every where into the nervous fibres, and puffe them up, neither do they immediately recede back from them: from hence the Peritonæum ſwells, and the guts being blown up and enlarged, they are as it were inflated, the Meſentery, and other membranous bowels, being turgid with an impetuous Spirit, are as it were raiſed up into a bulk; moreover, while theſe come thus to paſs, that the vacuities cauſed from the ſwelling of hollow bowels might be filled, a portion preſently *Its cauſe and formal reaſon explicated.*

of every humour within contained, being rarified into vapours, forthwith turns into wind, wandring about thoſe empty ſpaces.

And proved by arguments and inſtances.

Truly, we have clearly enough ſhewn, by reaſons and inſtances in our Pathologie of Convulſions, that the animal ſpirits puff up the membranous parts by their irregularity, and ſo produce as it were this windie Diſtemper. Moreover the ſame is demonſtrated by Anatomical obſervation made in diſſecting a living Creature; *viz.* inaſmuch as the Trunk of the eighth pair of Nerves, deſcending on each ſide by the Neck, if it be taken out and bound with a thred, forthwith all the ſtomach ſwells up, as if it were puffed with winde; which certainly can proceed from no other cauſe than that the animal Spirits of the fibres of that bowel, and others flowing through the nervous paſſages, (inaſmuch as they being cut off from their origine, are driven into confuſion) do tumultuouſly enter thoſe parts, and puff them up. Beſides theſe, for the further illuſtrating of this Hypotheſis, I will relate a Hiſtory cited by the moſt renowned *Smetius*, of an univerſal Tympany (as he calls it) in a certain young man of *Liege: Who when he had received, in a conflict, under his right arm-pit, a wound, made by a prick, penetrating into the Cavity of his breaſt, next day and night being paſt, he appeared in the morning after ſwell'd throughout his whole body, not only in his breaſt, but alſo in his back, belly, loins, and in the cods, beſides both in his arms, ſhoulders, neck and face, that he could not open his eye-lids, alſo on the crown of his head, the ſkin being every where ſwolne and tumefied, the tumour was every where extended with great pain.* The Author calls this wonderful affection, an Univerſal Tympanie. The moſt renowned *Sennertus* relates a Caſe like this from his own knowledge: Moreover, I remember I have heard or read of the like from a wound of the breaſt being received near the arm-pit.

An univerſal Tympanie.

The Cauſe of an univerſal Tympanie inquired into.

Notwithſtanding, the reaſon of this Symptom, deliver'd by *Smetius*, and approved by *Sennertus*, doth not at all pleaſe me: for they aſcribe the cauſe of that general Tympanie *to the puffing up of the breaſt, by the axillary wound, made all that night under the skin, as we ſee a new and moiſt bladder to be blown up by boyes with a quill:* which truly doth not only ſeem improbable, but alſo we think ſcarce poſſible, that the wind to be blown out of a wound of the Thorax, by reaſon of the hole one night ſtopt, can enter the skin, and from thence paſſing through the whole body, ſhould make it become every where Tympanitical: For beſides that the wind cannot ſo ſuddenly paſs from thence into all parts, although it ſhould be blown with a quill from the mouth, under the skin; beſides, while the orifice of the wound is ſtopt, no wind can altogether be blown out from the Cavity of the breaſt, becauſe none in the mean time enters. But aſſuredly the cauſe of that wonderful affection is this; (whence alſo the formal reaſon of a Tympanie is illuſtrated) In the Breaſt near the Arm-pits, are many and eminent foldings of Nerves, (as we have deſcribed in our Treatiſe of Nerves,) by which the nerves of the whole body communicate among themſelves: *viz.* the Trunk of the eighth pair unites with the intercoſtal Nerve, and both with the nerves of the *Spina Dorſi*, by branches and ſprigs ſent here and there. Wherefore, this nervous folding, perchance being pierced by the point of the Sword, firſt of all the ſpirits reſiding in that place being provok'd, run into diſorders, afterwards a conſent being immediately made thorow ſo many notable Nerves, and tranſmitted to and fro every where, other Spirits, and then again others, are ſenſible of the like irregularities, and puffing up the membranous and nervous Fibres (which every where they enter tumultuouſly) they induce as it were a tympanitical affection through the whole body. By reaſon of the like fury or virulent madneſs impoſed upon the Spirits, in any place, and from thence immediately diffuſed far and wide, certain Poyſons being drunk, the ſtrokes of weapons, or of wild Beaſts, or a venemous bite, do frequently induce a ſwelling together of many parts, or of the whole body; which ſwelling diſtemper of the Spirits, is ſtyl'd by *Helmont* to be *Indignatio Archæus*. There are many other Caſes and Inſtances, by which it is moſt clearly evinced, that the Animal Spirits being provok'd, and driven into angry inclinations, inaſmuch as they do more impetuouſly enter into the nervous Fibres, are wont firſt to ſwell the membranous parts, and to excite many paſſions out of thoſe, which are vulgarly but falſely aſcribed to windes: ſo that in truth no other cauſe of a Tympanie can be aſſigned more like truth.

The true cauſe aſſigned.

Why the belly ſwells in the dead.

If it be objected, that the Paunches of the defunct after ſome time are raiſed by winde into a bulk, and ſwell like as in a Tympany: I pronounce this to proceed from the putrefaction of humours, and the extream diſſolution of the mixture, wherein

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all the active particles depart, being freed one from the other, and flying about ſeek vent in every place, and diſtend greatly all obſtacles, and chiefly the ſides of the Cavities, (which doth not at all happen in living bodies;) wherefore, as all Carkaſes do not putrifie alike, ſo their bellies ſwell ſooner or later, more or leſs: But while life endures, no rottenneſs or diſſolution of particles is made in an animated body, that can bring about a ſplanchnick fermentation or ſwelling. In the mean while we deny not, that winds are generated within the offices of concoction, ſanguification, and ſeparation, yea within all the particular cells and receſſes of our whole body; notwithſtanding from them all, unto the winds whereſoever engendred (whileſt the Spirits have their due influence, and actuate the nervous as well as moving fibres, that the ſides of the bowels be not kept diſtended and rigid) an eaſie vent does every where lye open. And the truth is, in a Tympany, we allow the wind to fill up the empty ſpaces, but the ſpirits, inaſmuch as they extend the bowels by their irregularity, do firſt cauſe thoſe vacuities, (wherein the winds ſecondarily and conſequently are engendred) and they (inaſmuch as the ſame bowels are ſtill kept ſtrutted and diſtended) do hinder thoſe winds from being removed.

The Animal Spirits and not winde the cauſe of the Tympanie.

And now I judge it is plain enough by what we have ſaid, that the animal ſpirits rather than the wind do raiſe ſwellings of the belly in that ſort; at leaſt ſuch ſhort and tranſitory ones, as happen in Hyſterical and Colick fits. Notwithſtanding there yet remains a great difficulty, after what manner the Tympanitical ſwelling of the Abdomen, which is fixt and permanent, yea for the moſt part immovable, can proceed from any ſuch cauſe; eſpecially, becauſe the Animal Spirits being of their own nature active and very apt to motion, do for the moſt part ſo affect removal, that unleſs they be wearyed or become defunct, they ſcarce ever lie ſtill.

That I may looſen this knot by reaſoning, it becomes us to conſider the Nervous Juice together with the ſubſtance of the Animal Spirits, which is every where a vehicle to them, and alſo a bridle: for the Spirits enjoying the moſt ſubtile ſtream thereof, do freely expatiate, and leſt being diſſipated from one another, they might fly away, they are contained in an entire ſeries. When therefore that Juice is faulty as to its temper or motion, immediately the animal ſpirits become diverſly delinquent, or are perverted in the exerciſes of their functions, as we have at large expounded in our Treatiſe of Paſſions. And leſt by repeating them now I ſhould make long Preambles, I will contract into a few words what belongs to the preſent purpoſe.

This happens by the fault of the Nervous juice.

Wherefore in the firſt place, it is to be obſerved, that the contents of the nether belly (excepting only the Liver, Spleen, and Kidneys) are furniſhed with many membranous bowels, (which the nervous fibres for the moſt part weave together) whence it follows that the nervous Juice (whoſe journey is longer, and the paſſages ſtraiter in theſe parts) doth find here many remora's: which alſo may be proved from the effect, foraſmuch as the convulſive invaſions, every where ſtirr'd up in the Hypochondriack, Colick, Nephritical and Hyſterical Paſſions, do ſo grievouſly infeſt the Abdomen. When therefore that Juice watering the nervous fibres of theſe parts, ſhall be either viſcid or tenacious of it ſelf, or fill them with very many feculencies, for that cauſe it will come to paſs, that all the animal ſpirits will not eaſily return from thence as oft as they are hurl'd into theſe fibres, in ſome part obſtructed: and when in this manner there is a full incurſion, and a ſmall return of them, at length it will happen that great abundance of the ſpirits remain in theſe fibres every day more and more impacted, and hold them always diſtended and very much puffit up; and at length by reaſon of the ways of their ingreſs and regreſs in thoſe fibres being obſtructed, they become immovable in that place, and keep the affected parts always extended and ſtiffe: in the mean time becauſe theſe Spirits there impacted within the nervous paſſages, and cramm'd thick, have commerce with others that flow to them in their dens, therefore the affected part although it be ſtiffe and almoſt immovable, yet however enjoys ſenſe. This Pathologie although it may ſeem to ſome a Paradox, and uncouth, I doubt not but it will deſerve aſſent from many, if it be throughly weighed, that thoſe who have been a long time obnoxious to Hypochondriack, Colick, and other convulſive diſtempers of the nether Belly, do at length become ſick of a Tympany.

By the obſtruction whereof the Spirits within the fibres are detained and made immovable.

The formal reaſon and conjunct cauſe of a Tympanie being delineated after this manner, before we proceed to trace out diligently the more remote cauſes thereof, it may be lawfull for us from what we have ſaid to deliver a definition, or at leaſt a certain

A deſcription of the diſeaſe.

certain deſcription of this diſeaſe, viz. *That it is a fixt and conſtant Tumour of the Abdomen, equal, hard, ſtiff, and yielding a noiſe upon ſtriking, taking its origine from a convulſive inflation of the parts and membranous bowels, by reaſon of the Animal Spirits being driven into thoſe fibres in too great abundance, and through the fault of the nervous juice obſtructing, being hindred from their return back; to which diſeaſe conſequently an accumulation of winds in the empty places, accrues as a complement.*

Its procuring cauſes.

As to what appertains to the procuring and evident cauſes of this diſeaſe, it very ſeldom happeneth that they are altogether obſerved, but that inſinuating it ſelf by ſilent beginnings, it frequently is finiſhed, or becomes deplorable before it is perceived; inſomuch that againſt this diſeaſe ſcarce any antidote can be appointed; for while the ordinary functions are not much prejudiced, the ſwelling of the belly is preſumed only to have its origine from winde, and while it is expected to vaniſh ſpontaneouſly, it often grows into a Tympanie. Wherefore that we may have timely notice of its beginning, we may take notice, that ſome previous affects diſpoſe to it; of this ſort is firſt an Hypochondriack, Colical and Hyſterical diſpoſition, yea and ſometimes an Aſthmatical; whoſe fits when they are uſed to be frequently raiſed, if at length a tumour of the Abdomen follow it, though it be ſmall in the beginning, a Tympany forthwith may be feared. Of the former of theſe affects caſes every where are to be met with, and ſtand fair to common obſervation: of the later *Scherichius* reports, *That a man of Sixty years of age was infeſted with this ſymptome ſome months before his Belly was ſwell'd into any manifeſt tumour, that as often as he ſate at meat, beginning to eat, alſo when compoſing himſelf for ſleep, he began to ſleep ſoundly, he was ſurprized with ſuch a difficulty of breathing, that the frequency of it threatned the danger of choaking; at which time alſo he perceived a certain palpitation about the Hypochondria, as if ſome living Animal were underneath the midriff; this diſtemper afterwards ended in a Tumour of the Abdomen, by which he dyed.* In this and other caſes now cited the ſame reaſon holds, *viz.* that the animal ſpirits being uſed to make irregular excurſions into the nervous Fibres of the lower belly, at length do not only more often and abundantly enter into them, but being impacted and hindered they abide in them, and ſo at length induce tympanitic inflations of the bowels. Truly this morbific beginning happens ſooner or later, if thereupon do come the evident cauſes, which diſturb the Spirits in the bottom of the belly, and compel them to frequent diſorders, and alſo do either ſtop the motion or pervert the temperature of the nervous Juice flowing within thoſe Fibres; in which rank are accounted irregularities in the ſix Non-naturals, immoderate Paſſions, and chiefly of grief, and uſual evacuations ſuppreſs'd, drinking of cold water after ſome great heat, or any ſudden cold induced on the belly, either from air or water.

Other previous convulſive affections.

The caſe of an Aſthma ending in a Tympanie.

The evident cauſes of this diſeaſe.

The Prognoſticks thereof.

As to the Prognoſticks, this diſeaſe is always accounted of ſo bad an omen that commonly the name is abhorr'd, inſomuch that frequently when there is no ſuſpicion of ill from the tumour of the belly, if perhaps that ſwelling be call'd by the Phyſitian, a Tympanie, forthwith it is concluded deſperate. Notwithſtanding this Diſeaſe rarely kills of it ſelf, but being protracted a long ſpace of time, that it may at length more certainly kill, it gains to it ſelf an Aſcites, as a Harbinger of Death. That we may ſearch into the reaſon thereof, it will be obvious enough to conceive, while all the bowels are diſtended in the lower belly, and are held as it were ſtiffe, the paſſages of the blood, and nervous and lymphatic humours, being too much extended, or compreſſed are much ſtraitened, and for that cauſe cannot freely and readily tranſmit its Juice; from whence it follows that every humour being ſtraitned in the paſſage, that at length it may paſs by ſome means, it ſhakes off a certain ſeroſity from its maſſe wherever way is given; and thoſe droppings of the humours falling into the hollow of the Abdomen, excite an Aſcitick Dropſie.

The Cure.

What relates to the Curatory part of this Diſeaſe, the whole ſcope of healing is commonly bent againſt wind, *viz.* Indications inculcated by practical Authors ſuggeſt the matter to be evacuated, from whence the winds are raiſed, and to remove the cauſe that lifts them up, and the winds to be diſcuſs'd and diſſipated, which do already diſtend the belly.

For theſe ends Purgers appointed againſt the humour chiefly ſuſpected are wont to be preſcribed with great confidence, although with ſmall or ill ſucceſs; that is to ſay, Phlegmagogues ſo called, another while thoſe that purge Melancholy, another while thoſe that purge Choler, whereto alſo are joyn'd purgers of water (as weapons intended againſt every enemy.) For this diſeaſe (as is manifeſt by our obſervation) is

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wont for the moſt part to be exaſperated with ſtrong Purgers, and ſeldom alleviated; the reaſon whereof is evident enough, becauſe the nervous fibres being provok't by a ſharp Medicine, the animal Spirits renew their irregular excurſions, and do every where more and more ſtretch them out, rather than give any remiſſion to them; wherefore, although frequent and abundant watery and flatulent ſtools are procured, notwithſtanding the Belly ſwells the more. Moreover, to diſpell, diſcuſſe, and bridle the winde, there is a more than Æolian power preſcribed; Medicines commonly call'd *Carminatives*, almoſt of every kind or form are ſedulouſly adminiſtred, within and without, above and beneath, and upon the part affected; notwithſtanding this diſeaſe for the moſt part is untamed by all theſe; whence we may ſuſpect, that the true cauſe of the diſeaſe lyes as yet conceal'd, becauſe Medicines profit not that are adminiſtred, indicated or ſuggeſted according to the ordinary Ætiologie or reaſon of it.

Remedies deſigned againſt Wind profit not.

Although I cannot challenge a better ſucceſſe in curing this diſeaſe, or a more certain method of healing, atteſted from experience, notwithſtanding in the mean while we will here proffer another way of curing, accommodated to our Hypotheſis, and eſtabliſhed by reaſons ſtrong enough.

Wherefore in a Tympany, as in moſt other affections, there will be three chief indications: Whereof the firſt, and chiefly inſiſted on, is the Curatory, that by recalling the animal Spirits from their convulſive affection, and reducing them into order, endeavours the removal of the ſwelling of the Belly. The ſecond Preſervatory, which reſtrains thoſe or other Spirits from their irregular excurſions into the lower Belly, and together corrects the faults of the nervous liquor, watering it, both as to its temper, or motion. The third Vital, by removing the Symptoms urging, doth ſuccour and ſuſtain all the functions oppreſſed or weakened, as much as poſſible may be.

3. Curatory Indications.

I. The firſt Indication is of greateſt moment, on which the hinge of the whole Cure turns, but it is moſt difficultly performed, for it doth not eaſily appear by what remedies or wayes of adminiſtration it ought to be attempted, when moſt weapons or medicines do little or nothing prevail againſt this inviolable enemy. Phlebotomie aſſumes no place here, but is declined for the moſt part as prejudicial; alſo Cathartick, inſomuch as they provoke the affected fibres, and diſturb the Spirits, and hurry them more impetuouſly, do increaſe rather than diminiſh or cure the Tumour of the Belly; in like manner Diaphoreticks impell the Spirits and the morbific particles deeper into them, whereas they ought to be allured, and call'd out of the Fibres. The chief order of healing ſeems to be placed in Diureticks and the uſe of Clyſters; and alſo great things are expected from topical Applications, becauſe they are more immediately exhibited to the diſeaſe, and as it were by contact, and becauſe they do beſt diſcuſſe Tumours in other places. Yet not all Diſſolvents are here fitting, nor thoſe which profit moſt in other Tumours; for the more hot being given for diſcuſſing, whether they are applyed by fomentation, Liniments, or in the form of a Cataplaſm or Plaiſter, oftner afford hurt than ſuccour in a Tympanie; for they both open and dilate the paſſages of the fibres, that from thence they may lye more open to the incurſion of the Spirits; and alſo rarifie the particles impacted, ſo that while they occupy a larger ſpace, an inflation and intumeſcency of the Belly is augmented. Laſtly, what appertains to Alteratives which ſuccour againſt other affections of the nervous kinde, only a certain few are fit in a Tympanie; for where the morbific matter ſticking within the ſtraiter paſſages cannot be impell'd ſtraight, or throughly, Elaſtick medicines render the ſtoppage greater and more fixt, by enfixing the matter deeper; wherefore Spirit of Harts-horn, of Soot, of Sal Armoniack, yea alſo Tinctures, Elixirs, and other Medicines endowed with a volatile Salt, or active particles of another kind, do not only acquire heat, and a troubleſome thirſt in the ſick perſon troubled with a Tympanie, but alſo cauſe the Abdomen to ſwell the more, inaſmuch as they melt the blood and nervous Juice, and ſtirre the Spirits, inſomuch that the particles depoſited by each of theſe, are compell'd into the parts affected.

The firſt Indication hardeſt.

What, and what ſort of Medicines are good or hurtful in this Diſeaſe.

But truly although Medicine doth ſo little avail againſt this diſeaſe, it is not altogether to be neglected, (as if either it effected nothing, or what is ill,) but it behooves us to turn every ſtone, that by ſome means we may ſuccour the Patient, and at length may obtain a cure for him, or at leaſt an alleviation. Wherefore in the firſt place (becauſe it is the cuſtom to begin with Purgatives) although the ſtronger do ever hurt, and the gentler ſcarce ever prevail to diſcharge the conjunct cauſe, notwithſtanding theſe latter, inaſmuch as they do ſomething ſubſtract the nouriſhment of the diſeaſe, alſo

Only mild Purgers and Clyſters are convenient.

alſo make a way by which other Medicines do exert their powers, they ought to have their turns in phyſical practice once in ſix or ſeven dayes; and at other times let Clyſters (whoſe uſe is much better) be frequently adminiſtred. Hydroticks being prohibited, we muſt reſt upon moderate Diureticks, whereto are adjoyned things reſpecting the alteration and reduction of the Spirits and Humours, which truly make up the Tympanitical pharmacy. Moreover in the mean time the uſe of Topicks is not to be neglected. We will annex certain ſelect forms of Medicines appropriated for every of theſe purpoſes. For a Medicine mildly ſolutive, let the laxative Wine be uſed, preſcribed by the renowned *Greg. Horſtius* for a Tympanie, in his book of Obſervations, *lib.* iiij. *Chap.* xxx. or in its place let the following be preſcribed with greater eaſe.

Forms of Medicines.

A ſolutive liquor.

Take the leaves of Peach-flowers, of Damask-roſes, of each two Pugils, Broom, Elder, Centaury the leſſer, of each Pugil 1. *the leaves of Agrimony, Roman Wormwood, of each one handful, Senna one ounce, Rhubarb ſix drams, Carthamus-ſeeds half an ounce, Dwarf-Elder two drams, yellow Sanders three drams, Galangal two drams, ſlice them and bruiſe them, put them into a ſilk Bag in a Glaſs, with* 2 *pound of White-wine, Saxifrage-water one pound, Salt of Tartar one dram and a half, let them ſtand* 48 *hours, let the patient drink from four ounces to ſix, every third or fourth day.*

In a hotter Conſtitution let the following form be taken, which I have proved with ſucceſs in this diſeaſe.

Take of purging Mineral waters eight pound, Salt of Wormwood two drams, let it evaporate in a gentle Bath to two pound. To this I uſe to adde four ounces of water diſtill'd from Purgers with Wine; the doſe from four ounces to ſix.

Or to the two pound of evaporated water adde of Mechoacan, Turbith, of each half an ounce, Rhubarb ſix drams, yellow Sanders two drams, Cloves one dram, digeſt them cloſe and warm for two hours: filtre it through Paper, the doſe 3 *or* 4 *ounces.*

Clyſters are of frequent uſe in this Diſeaſe, inaſmuch as they looſen the Belly without any great irritation of the fibres.

Clyſters.

Take of the Infuſion of Stone-horſe dung with Cammomile-flowers a pound, Mellis Mercurialis two ounces. After the ſame manner Decoctions and Infuſions are prepared, with Carminatives, from Dogs-dung.

Take of the Emollient Decoction one pound, Sal Prunella, or Sal Armoniack from one dram to a dram and a half; make a Clyſter.

Take of ſound Urine one pound, Sal Prunella one dram, Venice *Turpentine diſſolved with the yolk of an Egge, an ounce and a half: make a Clyſter.*

Diureticks.

2. Diureticks if any other Remedies promiſe help in this Diſeaſe.

Take of Millepedes living and cleanſed three ounces, one Nutmeg ſliced, bruiſe them together, and pour upon them one pound of the Diuretick-water preſcribed below: Preſs them ſtrongly, the doſe from three ounces to four twice a day.

Diſtilled waters.

Take of green Juniper-berries, and Elder-berries, of each ſix pound, of Firre-tops four pound, green Walnuts two pound, Cortex Winterani four ounces, the outer Rinds of ſix Oranges and four Limons, Seeds of Ameos, Rockets, Creſſes, of each an ounce and half, Dill-ſeeds two ounces, ſlice them and bruiſe them, and adde of Poſſet-drink made with White-wine 8 *pound, diſtill it in common Organs, let the whole liquor be mixed.*

Pills.

Take of Cryſtal Mineral half an ounce, Volatile Salt of Amber, two drams, the powder of Carrot-ſeeds one dram, Turpentine of Venice *what ſuffices to make ſmall Pills, the doſe Numb.* 3. *in the evening and morning, drinking after it three ounces of the diſtilled water.*

Spirits.

Take of the ſweet Spirit of Salt half an ounce, take ſix drops to twelve, twice in a day, in a draught of the ſame water, with a ſpoonful of Syrup of Violets.

Take of ſpirit of Salt of Tartar one ounce, take one ſcruple to half a dram, twice a day, after the ſame manner; So alſo ſpirit of Nitre, and Tincture of Salt of Tartar may be taken.

An Expreſſion.

Take of Plantane, Chervil and Clivers-leaves, of each four handfuls, bruiſe them, and pour

pour on them a pint of the former diſtilled water. Preſs them ſtrongly, the doſe three ounces, twice or thrice in a day with other Medicines.

Take of Graſs-roots three ounces, of Butchers-broom two ounces, Chervil and Eringo candied, of each one ounce, ſhavings of Hartſhorn, Ivory, of each two drams, of burnt Hartshorn two drams and a half, Burdock Seeds three drams, boyl them in three pound of Spring-water to two pound, in it ſtrained hot, infuſe the leaves of Clivers, Water-creſſes, bruiſed, of each one handful, adding of Rheniſh wine ſix ounces, make an infuſion cloſe and warm for two hours, after ſtrain it again, and adde of Magiſtral-water of Earth-worms two ounces, Syrup of the five opening Roots an ounce and a half. Make an Apozeme, the doſe four ounces twice a day, with ſome other medicine. Apozems.

While theſe are taken inwardly, alſo Topicks and outward Applications may be carefully adminiſtred; not thoſe which are hot and diſcuſſing, but thoſe which are endowed with particles of a volatile Salt, and Nitrous, to wit, thoſe which deſtroy the Combinations of other Salts, and diſſolve the impactions of the Spirits, for which we propound the enſuing things. If Fomentations ought at all to be admitted into uſe, let them not be applyed too hot, alſo let them be prepared not of thoſe that are uſually call'd Carminative, but chiefly of Salts and Minerals. *Cabrotius* (cited by *Helmont*) ſays, *That he cured one of* 80 *years of age, whoſe Belly he fomented twice a day with a Lye, in which he boyled Salt, Alum and Sulphur, and after applyed Cow-dung for a Cataplaſm.* I uſe to preſcribe theſe enſuing. Topicks.

Take of flowers of Sal Armoniack one ounce, Cryſtal mineral two ounces, Spirit of Wine ſmall and imbued with much Phlegme two pound, mixe and diſſolve them in a glaſs. A fomentation.

Let a woollen Cloth dipt into this warm be applyed upon the whole Abdomen, and then let it be changed, wetting it again; let it be done for the ſpace of half an hour twice a day, afterwards let there be applyed a Cataplaſm of Cow-dung, with the powder of Dogs turd, or the following Plaiſter.

Take Empl. Diaſaponis, that is, de Minio, *with* Venice *Soap, let it be ſpread thin upon limber Leather, and applyed to the whole Belly, to be renewed once in ten or twelve dayes.* A Plaiſter.

II. The ſecond *Indication* requires moſtly alterative Remedies, to wit, thoſe which ſtop the fermentations of the humours in the bowels of the nether Belly, and the Orgaſms and irregular excurſions of the Spirits, alſo thoſe which procure equal mixtions and due motions of the Chyle and nervous Juice: for which end Chalybeates are chiefly in uſe. And truly it is wont not only in this, but in many other ſplanchnical Diſeaſes, to have reſort to the Medicines of Iron, as if from thence to fetch the ſharpeſt weapons; whenas many Empiricks and Quacks, who preſcribe theſe things confidently and dogmatically, obſerve not by what way ſuch a Medicine doth operate, or what alterations for the better may be lawfully expected from thence: wherefore, while Iron, changed into Medicine, although the Sword of *Goliah*, is ſnatcht and brandiſht by a blind man, it is no marvel if it prove in vain, or if in the ſtead of the diſeaſe, which is an Enemy, Nature it ſelf is ſometimes hurt; and truly frequently it happens ſo, when Chalybeats, of which there is great variety, and diverſity of operations, are adminiſtred without any choice or difference either of the temperament or conſtitution in the Patient, and reſpect to the ſtate of the Diſeaſe. The ſecond Indication. Of Chalybeate Medicines.

Of Medicines prepared of Iron or Steel, and of their vertues and manner of working, we have in another place treated, and there is no need here to repeat the ſame things. For this diſeaſe, if any of them, not all of them are fit; for thoſe in which the frame of the mixture being opened, the Sulphur remains ſtill, and being looſened predominates over the reſt, they are altogether to be excluded from this number; for they do much ferment the Juices of the bowels with their notable fermentation, and do ſo exagitate the Blood and Spirits, that the whole Region of the nether Belly is lifted up into a greater bulk, as if by a certain Spirit thronging violently into it. What preparations of Iron are not convenient.

Neither here are they fit, from which the ſulphureous particles together with the ſaline are chaſed away, as in *Crocus Martis* prepared by long and ſtrong Calcination. For this Medicine as it is conducing to ſtop all fluxes, rather fixes any impaction of Humours and Spirits, and renders them more obſtinate.

What ſort may be admitted.

But there remains a Martial Remedy of a middle kind, wherein the Sulphur being wholly or for the moſt part expell'd, a vitriolic Salt remains and predominates: as indeed it is in the ſolution of the filings of Iron, or in a ſimple Infuſion, or in Mineral water, in the Salt or Vitriol of *Mars*, in our preparation of Steel, with many others; out of which medicines, being prepared or compounded, we find by often Experience that in ſome caſes, they contribute notable help. For theſe deſtroy the exotick ferments of the bowels, and reſtore the native ferments; they open their obſtructions, they fix the blood, and reſtrain its conſiſtence from too much diſſolution; wherefore Chalybeate remedies, after the ſame manner as certain other alteratives, do perhaps ſomething profit againſt the procatarctick, and more remote cauſes of a Tympany; but as to the conjunct cauſe, they contribute little or no ſuccour.

Forms of Chalybeates.

Take of our Steel finely prepared two drams, the diſtilled water above preſcribed two pound, Syrup of the five Roots two ounces, mix it in a glaſs, let it clarifie by ſettling, the doſe three or four ounces, in the morning, and at five afternoon.

Take of the Powder of Aron-roots, Crabs-eyes, of each three drams, Cryſtal Mineral two drams, Vitriol of Mars *a dram and a half, Sugar of Roſemary-flowers two drams, mix them, the doſe half a dram twice in a day with a convenient vehicle.*

A liquor of the flowers of Tapſus Barbatus.

Hartman doth wonderfully magnifie the liquor of the flowers of *Tapſus Barbatus* or Mullein, as a ſpecifick remedy in this diſeaſe, by putting the freſh flowers into a Veſſel, being ſtrongly preſs'd, and put into an Oven with bread being cloſe ſtopt, afterwards the Liquor being ſtrained, let it be diſtill'd *in Balneo*, the doſe one Scruple in the Decoction of Fennel-ſeeds and Roots. Surely this Medicine, if it doth effect any thing, ought to be given in a larger doſe.

Johannes Anglus commends an Electuary of *Roſata Novella* with *Diatrion Santalon*, and *Egges of Ants*, which remedy ſeems to promiſe ſomething probable enough. In imitation of this I here propound this enſuing.

An Electuary.

Take Conſerve of Chichory flowers, of Indian Creſſes, of each three drams, powder of Aron-roots, Lignum Aloes, yellow Sanders, of each one dram, Crabs-eyes one dram and a half, Salt of Wormwood one ounce, Ants Egges one ounce, the liquor of Tapſus Barbatus half a dram, with a ſufficient quantity of Syrup of Citron-rinds make an Electuary, the doſe two drams twice in a day, drinking after it of the former diſtilled water, or of the following Julep three ounces.

A Julep.

Take the water of the leaves of Aron, of the Juice of Elder-berries, of the water of Juniper and Elder-flowers, of each ſix ounces, the magiſtral water of Snails, and of Earth worms, of each two ounces, Syrup of the Juice of Elder-berries two ounces, mix and make a Julep.

Third Indication.

III. The third Indication Vital preſcribes Remedies againſt fainting of Spirits, and difficult breathing, and againſt Watching and Thirſt. We will briefly annex certain forms of either kind.

1. Cardiacks.

Cordials.

Take of the water of Napha, *Marygolds, Camomile, of each three ounces, of Dr.* Stephan's *water two ounces, Tincture of Saffron two drams, Sugar one ounce, Pearls one dram, make a Julep, the doſe four or five ſpoonfuls three times a day or oftner in faintings.*

Take Conſerve of Marygolds two ounces, Confection of Alchermes, and de Hyacintho, *of each two drams, prepared Pearl one ounce, Syrup of the juice of Citrons, enough to make a Confection, take the quantity of a Nutmeg evening and morning, drinking after it a draught of the Julep.*

2. Hypnoticks.

Hypnoticks.

Take of Aqua Hyſterica *ſix drams, Syrup* de Meconio *half an ounce, mix them, and take late at night.* Or,

Take of ſmall Cinnamon-water one ounce, Diacodium three ounces, Tincture of Saffron two drams. Mix them, and take one ſpoonfull at night, if ſleep be wanting. Or,

Take

Take Syrup of Cowſlip-flowers three ſpoonful., compound Pœony-water one ſpoonful, Laudanum tartarized one dram, take one ſpoonful, if Watchings require it.

3. Extinguiſhers of Thirſt, in this Diſeaſe being very thirſty, ought frequently and in ſmall quantities to be adminiſtred, that that troubleſom ſymptom may be reſtrained without much drink, which is perpetually pernicious. For which purpoſe, *Things mitigating Thirſt.*

Take of Conſerve of Wood-ſorrel paſſed through a Sieve three ounces, Pulp of Tamarinds two ounces, Sal Prunella one dram, with a ſufficient quantity of Syrup of the juice of Wood ſorrel, make a Lohoch, of which let him luck often.

SECT. II. CHAP. V.

Of an Anaſarca.

NOw two kinds of Dropſies, *viz.* Aſcites and Tympanie (according to common reckoning) being finiſht, although the third, to wit an *Anaſarca* (for that it is an affection rather of the whole body, than of the nether Belly) appertains not properly to this place, notwithſtanding the Pathologie thereof having ſome affiance with the former, we think fit to deliver here alſo its Cure in ſhort. An Anaſarca is deſcribed after this manner, *That it is a white ſoft Tumour of the whole outward Body, or of ſome of its parts, yielding to the touch, and leaving a dent upon compreſſion,* proceeding from a watery humour extravaſated, and accumulated as well within the interſpaces of the Muſcles, as within the pores of the fleſh and skin, yea of the Glandules and Membranes. *The deſcription of an Anaſarca.*

It differs from an Aſcites as to its outward form and appearance, yet not as to its morbific matter, which being the ſame in both diſtempers, as it is heaped within the greater or leſſer hollowneſſes, it gains divers Appellations of the Diſeaſe. *How it differs from an Aſcites.*

The watery humour procuring an Anaſarca, doth proceed altogether or for the moſt part from the blood; for it being continually produced within the maſs of blood by the fault and defect of ſanguification, it is poured out in greater abundance from the extremities of the Arteries, than can be received, or brought back by the Veins, or the Lymphaducts, or can be diſcharged by the Reins or pores of the skin, and other vents of the ſerous Juice. *The Original from the blood.*

From theſe it follows, that the material cauſe of this Diſeaſe is a watery humour, and the efficient is blood, which engenders waters and depoſits them in the places affected. We will exactly weigh the reaſons of either of them, and the manner of becoming and effecting it, and firſt we will treat of the efficient Cauſe of an Anaſarca. *The material and efficient cauſe.*

1. The affection of the Blood, or rather the Hydropical brood, conſiſts in theſe two things, to wit, Firſt by reaſon of a failure or fault of ſanguification, it doth not rightly aſſimilate the nutritious Juice perpetually infuſed into its maſs, but ſuffers it to degenerate into a watery humour: Then ſecondly by reaſon of the too looſe mixture thereof, it doth not retain that humour, ſo degenerated, ſo long within its conſiſtence, untill it might be diſcharg'd through fit Emunctories or Emiſſaries, but lets it out every where near to the ends of the Arteries, into the inter-ſpaces of the Veſſels, and there leaves it. Either of theſe vices of the Blood we will conſider a little more. *The Blood its efficient cauſe in a double reſpect.*

In the firſt place as to the former, for the moſt part it is confeſſed by all, that the Blood it ſelf and not the Heart or Liver ſanguifies, by what of late is plainly underſtood concerning the functions of theſe parts; yet by what means the Blood aſſimilates Chyle infuſed to it ſelf, and converts it into freſh blood, to be beſtowed to ſo many and diverſe ſorts of uſes, doth not eaſily lie manifeſt to us. But what ſome affirm, that it is made only by the exact comminution and commixtion of particles, and for that cauſe the particles of either kinde being confuſed together, they think, that within the *Firſt that it doth not rightly ſanguifie.*

ſtraiter paſſages of the Liver and Lungs they are kneaded and wrought together as it were with little peſtils, ſeems little probable to me; but on the contrary, I think theſe bowels (as I have ſhewed already) are conſtituted the Organs rather of ſeparation than of mixture; but the reaſon of ſanguification altogether conſiſts in this, that the active particles of the old blood, to wit, the ſaline and ſulphureous, being placed in vigour with the ſpirituous, immediately act upon the like particles of the infuſed Chyle as yet exiſting in an inferiour ſtate, and do ſo ſtir them up and ferment them, that thereupon being extricated from the coverings of the thicker parts, they are carryed into a like degree of exaltation or perfection with the former, and being at length aſſociated with them, and made alſo homogeneous, they put on the ſame nature of Blood; the more thick and heterogeneous particles being removed thence to another place, from thoſe which they had deſerted and gone away from. For truly Sanguification is altogether finiſht by Fermentation, even as the maturation of the Muſt into Wine or Ale; but the reaſon of the difference is, that Wine being ſhut up in the Tub, ſtill remaining entirely in the ſame Maſs, is ſlowly fermented, as to its whole conſiſtence, and is not accompliſhed but in a long ſpace of time; but the Blood conſtituted in a perpetual flux by the loſs of ſome parts and the reparation of others, is fermented by the parts ſtill received freſh, and is generated anew.

The reaſon whereof enquired into.

The reaſon and manner of ſanguification explained.

The old Blood for the moſt part affords the ſame thing towards the freſh Chyle, as Ferment from the flower or fæces of old Ale, being put into new Ale; notwithſtanding as it were by a contrary manner; becauſe the huge maſs of blood being formerly fermented, doth ſuddenly ferment and alter the ſmall portions of the Chyle continually brought in; but the fermenting liquor in Ale in a very little quantity is put to the great maſs of the other liquor to be fermented; which it brings not to maturity under a long ſpace of time. After the rudiments of blood are ſo caſt by fermentation, the concluſion and perfect aſſimilation into blood, is acquired by accenſion; (for ſurely that it is ſo enkindled (as I think) I have formerly ſhewed by demonſtration, which arguments chiefly taken from its proper paſſion, although many have cavil'd at, none have been yet able to overthrow.) Wherefore, while the whole maſs of blood conſiſts of Blood and Chyle confuſedly mixt together, it is fermented while it is circulating; and being divided into moſt minute portions, is ſpread through the whole Lungs, that it might be kindled ſucceſſively according to all its parts, by the nitrous air ſuckt in: for by that means both the vital flame is continued, and all the particles of Blood having as it were paſſed the fire, become more purified, and more agreeable among themſelves; moreover, they are ſo diſpoſed of whileſt they are kindling, that while ſome go into Nouriſhment of the Spirits, of the Nervous Juice and the ſolid parts, and others leſs uſeful depart into the ferments or recrements of the bowels; mean while others being more fixt, abide longer in the maſs of blood, and ſuſtain its conſiſtence, and by fermenting the Nutritious Juice, ſtill engender new Blood, untill themſelves being impoveriſhed, are at length diſcarded, and give place to others that are freſh and luſtie.

An Hydropick temper of the blood ſprings from a double reſpect.

Having ſhewed after this manner by what courſe Sanguification ought to be finiſhed, as well by fermentation as accenſion of the Blood; it will be eaſie to conceive wherein the fault conſiſts producing an Hydropick diſpoſition: To wit, this uſually aſſumes its riſe whenſoever either or both thoſe Conditions requiſite to Sanguification, either fail, or are perverted.

Viz. Firſt from the defect or fault of its Fermentation;

Firſt therefore this happens more frequently and rather, for that the blood being depraved in its temperature, doth not rightly ferment the Nutritious Juice poured into it, that ſo it might be changed into laudable blood. For when the watery particles predominate with the earthy in the maſs of Blood, the Salt and Sulphur being depreſſed with the Spirit, as all the functions, both Vital and Animal, from thence languiſh and waver; ſo eſpecially Sanguification it ſelf fails and is perverted. For the Juice of the Chyle commixt with the Blood, when it cannot be diſſolved and fermented, with the particles thereof, (after the faſhion of other liquors, as often as being mixt they want ferment,) it degenerates perhaps into a watery, acid, or ropy, or otherwiſe faulty humour, which being afterwards daily encreaſed, and at length riſing to its fulneſs, lyes heavy on the blood, and oft-times almoſt ſtifles its heat; from whence there is a neceſſity that it be forthwith diſcharged by ſome means, and whereſoever it can get vent; but afterwards for that the offices of ſeparation fail in their functions (the ſtock of the animal Spirits languiſhing by reaſon of the diminiſhed proviſion from the influxe of Blood,) the abounding Serum is depoſited

every

every where into the pores, and next vacuities whether greater or leſſer, out of the little mouths of the Arteries; from whoſe daily and great encreaſe, after all the pores are filled, ariſes that as it were ſenny habit call'd *Anaſarca* of the whole body outwardly, or of ſome of its members.

Secondly, not only the defect or fault of Fermentation, but alſo of the accenſion of the Blood, induces ſometimes an Hydropical diſpoſition on the maſs thereof: which is clearly diſcern'd, inaſmuch as ſome perſons inhabiting Maritime or mooriſh places, fall into the Dropſie without any other cauſe or occaſion, than that they draw a thicker air endowed with heterogeneous vapours, by which the Nitre is either driven away or obſcured. Therefore the blood becoming degenerate, and vitiated as to its temperature, becauſe it is not duely kindled, nor perfected by efflagration within the Precordia, doth not rightly diſſolve and aſſimilate the Juice of the Chyle, but ſuffers it to be perverted into a watery liquor. But although in the firſt place, the blood being depraved for this reaſon, ſometimes loſes its fermenting vertue, and therefore the rather and more immediately procures a Dropſie; notwithſtanding it is manifeſt, the firſt fault thereof aſſumes its origine from unwholſom air ſuckt in, and not duely enkindling the Blood; becauſe ſuch Hydropicks removing their reſidence into Sunny and Mountainous places, recover their health without any other Medicines. *Secondly, from defect of Accenſion.*

Hitherto of the neareſt Cauſes of an Anaſarca and which are conjoyned to the Diſeaſe it ſelf, which namely are the depravation or defect of the maſs of blood, chiefly as to its fermentation, and in ſome meaſure as to the enkindling thereof; which latter is ſcarce wont to be effective but when it follows the former: But what remains as to the more remote and procuring cauſes of this Diſeaſe, to wit, from which the defermentative affection ariſes (that I may ſay no more of the defect or depravation of its enkindling;) I ſay that theſe appear ſo diverſe and many, that I judge it hardly poſſible to recite them all particularly; notwithſtanding, very many or at leaſt the chief may be reduced to theſe three heads: to wit, For that the watery diſtemperament of the blood doth ariſe, inaſmuch as its active Principles, *viz.* Spirit, Salt and Sulphur, are not inveſted with their fermenting and ſanguifying force or vertue, I account this to come to paſs, either Firſt becauſe thoſe particles are too much waſted by their great expences; or Secondly becauſe they are not repaired by convenient and proportionate Refections; or Thirdly, for that they are overwhelmed or obſcured by ſome other duller or heterogeneous Particles being too much accumulated in the maſs of Blood: We will a little weigh the Reaſons and ways of each of theſe their coming to paſſe. *Reduced to three heads.*

In the firſt place, the former of theſe is evidently diſcerned in frequent and inordinate Hæmorrhages, whereby many men, although ſtrong and formerly healthy, are immediately enclined to a Dropſie, more than from any other accident or occaſion; the reaſon whereof is, that the blood is ſo impoveriſhed, through its more noble Particles iſſuing out in great abundance, that afterwards it can neither duely ferment nor enkindle the Juice of the Chyle brought into it. Moreover, ſometimes the ſame effect ſucceeds (although in a more ſlow degree) from Feavers and other long maladies and languiſhings; to wit, inaſmuch as the blood ſuffering under a long depreſſion, is ſo extenuated and robb'd, that at length it becomes watery and defermentative. *Firſt, becauſe the active particles of the blood, are too much conſumed.*

Secondly, the Blood ſometimes deſerting its genuine diſpoſition, declines into an Hydropical one, for that the nouriſhment being more ſlender than it was wont, or ought to be beſtowed upon it, its active and ſanguifying Particles are not enough repaired within its maſſe; for ſo we have obſerved, that ſome who have uſed themſelves to Wine and ſtronger Drink, after they have been reduced to homely Diet, and ſmaller drink, of water or ſmall beer, ſuddenly have become Hydropick. It is a common obſervation, and frequently true, although of ill omen, that Drunkards, and daily drinkers, if that wild Cuſtom be left, at length becoming ſober and abſtemious, are much in hazard, leſt by reaſon of the uſual fermentation of the blood being depreſſed, they become obnoxious unto that Diſeaſe. I knew a notable Drunkard, who declared that a Prieſt very learned and Pious was guilty of his death, becauſe he gave him admonition to Temperance, and to leave his Drunkenneſs, and he complying therewith, incontinently fell into a mortal Dropſie. *Secondly, becauſe they are not enough repaired.*

But the third cauſe or occaſion diſpoſing to that Diſeaſe, the moſt common and notable, conſiſts in this, that the active Particles of the Blood, being involved with other *Thirdly, becauſe they are buryed in duller particles.*

other more dull or heterogeneous ones, or being diſſipated from one the other, loſe their fermentative power, or cannot enough exerciſe it. But ſuch an affection of them, as it is wont to be raiſed from various cauſes and accidents, ſo chiefly from theſe, three, one while ſolitary, another while united together; to wit, Firſt from the Non-naturals immoderately received: Secondly from the Naturals unduely retain'd; or Thirdly, from the Preternaturals corruptly generated in the body.

Whereof there are three cauſes.

Firſt from Non-naturals immoderately ingeſted.

The errors of Diet deſervedly may be referred to the firſt rank of theſe (whereby the ſtock of that Diſeaſe is always moſt abundant) For it is a common Prognoſtick and in every bodies mouth, that Gluttons and great Drunkards dye at length of a Dropſie: to which moreover, not only Surfeits and immoderate and daily Tiplings incline, but alſo frequent and unſeaſonable Treats; and moreover the continual pouring in of abſurd and hard to be digeſted Nouriſhment. For from the evil courſe of Diet of each kind uſed any while, whenas the Juice of the Chyle, oftentimes crude, incongruous, and above meaſure plentiful, is poured into the maſſe of blood, it of neceſſity follows, that it is firſt burdened, and afterwards its Conſiſtence being looſened, the more noble Particles being forced aſunder, it is ſo involved, or abated by the other heterogeneous ones, that being hindred, it deſiſts from its fermentative or ſanguifying virtue; inſomuch that the bowels being in a ſhort time hurt by its aſſaults, a Cachexia, and then a Dropſie followes, whereof that is alwayes a forerunner.

Secondly, From Naturals unduely retained.

Secondly, in this place are put all ordinary, accuſtomed and ſolemn Evacuations ſuppreſſed. It is obſervable enough, that a Cachexie, and often a Dropſie, doth ariſe from a menſtruous or Hemorrhoidal flux diminiſhed or ſtopt, no leſs than from a too immoderate one, (by reaſon of the fermentation of blood impeded by the heterogeneity of Particles.) Moreover, the ſame is often wont to be effected from Iſſues ſuddenly ſtopt, or eruptions of the Skin ſuddenly repercuſs'd. Laſtly, ſuppreſſion of Urine, and ſweating much hindred, do render the blood more watery, by an immediate and neceſſary affection, and incline to the Dropſie. Alſo it is an obſervation frequent enough of healthful Perſons, who being compelled for ſome time to abſtain from going to Bed, that their feet have ſwoln.

Thirdly, From Preternaturals generated in the Body.

Thirdly, Preternatural things generated within the Body, but eſpecially Tumours and Humours do hinder the motion of the blood, or pervert its temper, and ſo induce an Hydropical diſpoſition. Tumours ſtirred up in ſome place about the Bowels, inaſmuch as they hinder or ſtraiten the circuit of the Blood, do cauſe its Serum to be there extravaſated, and poured out; by the accumulation whereof within ſome cavity, in the firſt place an Aſcites (as we have ſhewn above) and at length an Anaſarca a conſequent of that doth frequently enſue. Moreover, Humours of divers ſorts being engendred in divers places within, and transferred into the blood, do firſt pollute the maſſe thereof, and defile it with heterogeneous Particles, whereby at length it is ſo depraved in its temperament, that it perverts the Juice of the Chyle brought in (when it cannot further ferment and aſſimilate it) into an hydropical liquor. For this reaſon, nothing is more uſual than that Conſumptive perſons, and thoſe that are affected with ſtrumous and cancrous Ulcers, nay of any ſort within the Reins, Meſentery, Guts, or other Bowels of the lower Belly, after they have been long conſuming, dye at length hydropical.

Different manners hereof are reckoned.

The material cauſe of an Anaſarca, is partly the Serum of the Blood, and partly the nutritious Juice.

Hitherto concerning the next efficient cauſe of this Diſeaſe, alſo of the chief remote ones, as well procuring, as evident. But as to what appertains to the material cauſe, it is obvious unto the Senſe, that it is a meer Lympha accumulated within the pores of the Skin, and of the other outward parts; which being depoſited there by the blood (the liquor thereof being partly ſerous, and partly chylous Juice) but failing in Sanguification and Nouriſhment of the body, to which it was deſtinated, it is caſt off like recrements into the vacuous ſpaces of every veſſel. And though the matter of the Dropſie proceed from the Blood and Chyle, yet it is no wonder if it appear neither like blood, nor milkie, but only limpid; becauſe the Urine even of healthful people, after more plentiful drinking, is rendred crude as well as watery; and therefore it is manifeſt, it is nothing changed by the blood, but leaves in that place, whatſoever of colour or thicker conſiſtence it brings to its maſſe. And although a reaſon may be given in either caſe, that the Urine, inaſmuch as it is ſtreined through the Kidneys, and the hydropic matter thorough the pores of the ſolid parts, even ſo become limpid and watery; notwithſtanding it is evident by obſervation, that the watery part of the Chyle, even while it is confounded with the blood, is not intimately mixt with it, but being deprived of its colour and conſiſtency, it remains under

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the form of Lympha, within the pores of the blood; the ſure ſign of which is, that the blood taken from any Animal by Phlebotomy, after being cold it is divided into parts, exhibits a watery liquor (which conſiſts of Serum and Nutritious Juice) plainly limpid, and ſeparate from the other blood. It will be from our preſent purpoſe to enquire any further into the reaſons hereof, and manner of being ſo, and wherefore blood, which being poured into water doth preſently tinge the ſame, and bloodies all ſolid bodies whenſoever it is ſprinkled thereon, yet dyes the Serum of no colour with which it is intimately confounded and a long time circulated.

Why the hydropick humour is limpid and not milkie nor bloody.

From the Ætiologie of this diſeaſe now delivered, the differences of it may eaſily be collected; to wit, firſt it is either univerſal, when the whole habit of the body and all the members ſwell up; or it is particular, wherein for the moſt part the inferiour members only ſuffer, in the mean time the reſt of the body pining away for want of Nouriſhment, which kind of diſtemper, and not a Tympanie, *Proſper Martianus* will have *Hippocrates* ſtyle the dry Dropſie, in which what is reported of the Syren, the dry is joyned to the watery.

The Differences of the Diſeaſe.

Secondly, an Anaſarca whether univerſal or particular, is either ſimple or complicated with an Aſcites; and then either an Anaſarca enſues an Aſcites, or this diſeaſe follows that. Moreover an Anaſarca may be diſtinguiſhed many ways in reſpect as well of the procatarctick as evident cauſes, as we have before intimated; and ſuch differences thereof are found to be frequently of great moment about duely inſtituting the Prognoſtick and Cure.

Wherefore, what relates to the prognoſtick part, this diſeaſe while it is ſimple, proves leaſt dangerous among all the kinds of Dropſies; and a particular one ſeiſing only the inferiour members, ſo that the belly doth not together ſwell with them, is much ſafer than an univerſal one.

The Prognoſticks of it.

An Anaſarca bringing on an Aſcites, wherein for the moſt part the Urine is plentiful enough, and the thirſt not very intenſe, is far more ſafe than an Anaſarca brought in by an Aſcites, wherein the diſeaſed do very much thirſt, and make little, red, and thick, and for the moſt part a lixivial Urine. In like manner it is, or worſe, when an Anaſarca comes upon a Tympanie or a Phthiſis (as ſometimes 'tis wont.) Laſtly, no ſlight Prognoſtick of this diſeaſe is taken from the complyance, or the obſtinateneſs of the Patient, about Diet and Medicine. For whatſoever the condition of the diſeaſe may be, if the hydropick perſon refuſing medicine will indulge his fancy, we may not hope any good from thence.

About the Curatory part to be deſigned in order, two chief Scopes of Healing do occurre, *viz.* Firſt, that the water between the skin be conſumed by ſome means; Secondly, then proviſion muſt be made, leſt it be continually generated and accumulated afreſh; for which purpoſe a Phyſitian is to employ his labour, both that the bowels of Concoction being emptyed of their Superfluities, and free from obſtructions, may always procure laudable Chyle, and ſupply the maſſe of blood in due plenty; as alſo that the blood (the principles thereof being reſtored to its fermentative power) may orderly ferment the Juice of the Chyle continually poured into it, and aſſimilate it into Blood. The vital Indication ſeems not at all neceſſary in this diſeaſe as in many others, for that very rarely in this appear ſwoonings of the Spirits, or Watchings, for which Cordials and Hypnoticks are required; and there is little need of reſtoring Diets, becauſe Faſting and Abſtinence rather help, and oft-times make up the greateſt part of the Cure: the reaſon whereof is, that the Veſſels being emptyed through want, do ſwallow up the waters between the skin, or ſtagnating in other places, and do diſcharge them forth partly by the Kidnies, by the pores of the skin and other Emunctories, and partly do advantageouſly employ them being yet turgid with alimentary Juice, to the nouriſhing of the body.

The Cure of it. Two Indications.

Firſt, That the firſt *Indication* being Curatory, intending an Evacuation of the morbific matter, may be performed, there ought to be exhibited all Hydragogue medicins, as well ſimple as compound; and alſo the forms of medicines recounted and preſcribed in the former Chapter of an Aſcites. Moreover, hereto belong not only Catharticks and Diureticks, but alſo Diaphoreticks, which though in other ſorts of Dropſies they are very much forbidden, often take place in curing of an Anaſarca.

The firſt intends the Evacuation of the morbific matter.

In a ſimple Anaſarca we may lawfully adminiſter ſtrong Purgers, and frequently they much profit. And truly this Diſeaſe being cured ſometimes by means of a Cathartick, Empiricks do much glory of their Cures, and certain of their medicines become much cryed up for curing hydropical perſons; for if at any time it happens

By Purgers.

that

that they have healed one or two labouring with an Anaſarca, by their ſpecifick Hydragogues and Elateriums, it is enough wherewith they may always magnifie themſelves and their Art, although by the ſame medicine they have murdered a hundred Aſcitical perſons. Wherefore, although Preparations of Spurge, or *Elaterium*, *Pilulæ Lunares*, *Hercules Bovii*, and other Hydragogues, have ſometimes profited in ſome caſes; notwithſtanding if they be indifferently exhibited to all Hydropicks, or at all to any endowed with a weak Conſtitution, and Bowels of a brittle tone, or of evil conformation, they oftener cauſe death than remedy: wherefore let it always be committed to the judgment of a prudent Phyſitian, the time when, how long, and what ſort of Catharticks are to be uſed.

Strong Purgers are convenient but not to all.

We have before deſcribed forms of Hydragogue Purgers of every ſort, to wit, thoſe that exerciſe their power upwards and downwards, and as well mild as ſtronger workers, ſo that they may be referred hither, and accommodated to the method of healing now propoſed.

The manner of their working.

But if the reaſon be enquired, after what manner Purgers do operate in this diſeaſe, and why they more happily, and much more efficaciouſly bring out waters than in any other ſorts of Dropſie; I ſay, in an Anaſarca the morbific matter (which is the Lympha) ſubſiſts partly in the maſs of blood, partly in the habit of the body, within the pores and vacuities between the ends of the veſſels; wherefore, a ſtrong Cathartick being adminiſtred, preſently troubles and diſſolves the maſs of blood, and ſtirres it up to the excretion of any ſuperfluous or heterogeneous thing; and irritates alſo the little mouths of the Arteries gaping towards the Cavities of the Inteſtines, that the humour ejected from the blood may eaſier find vent through theſe Emunctories. From hence in the firſt place, the waters fluctuating within the blood are abundantly drained out, afterwards the veſſels being emptyed, do preſently ſwallow up again the waters between the skin, and preſently diſcharge them forth partly by ſiege, and partly by Urine, or Sweat; in the mean time there is no fear leſt, as in an Aſcites, the morbific matter being driven and poured from the blood, by the Medicine, ſhould be further forced into the places affected, whence not eaſily flowing back again, it ſhould be more largely encreaſed; nor leſt, as in a Tympany, by reaſon of the Fibres of the Stomach and Guts being too much irritated by the Phyſick, thoſe bowels might be provok'd into convulſive ſwellings. For as long as the bowels are firm and well conſtituted, the particles of the Medicine inflict them with no hurt; but preſently being brought into the blood, they do not only allure waters out of it, but by exagitating the maſs thereof, they raiſe the active particles formerly overwhelmed, and diſpoſe them towards their fermentative power.

Secondly, By Diureticks.

Secondly, Hydragogues working by Urine, as well ſimple as the compound, as alſo forms of Medicines prepared from either of them, and the manner of their adminiſtration, we have alſo deſcribed above, which alſo may be transferr'd hither to ſave repetition. But becauſe not all Remedies of this kind do help alike in all the Diſtempers, it is here obſervable, that for curing an Anaſarca *Lixivials* (as has been frequently manifeſt by our obſervation) do far excell other Diureticks. For indeed now it is a common and thredbare Remedy, for any one having ſwell'd members, after a previous Purge, to take twice or thrice in the day, from ſix to eight ounces of a Lye made of the Aſhes of Wormwood or Broom, made in White-wine, and to continue the uſe of it for ſome dayes. This Medicine moves potently the Urine as I have obſerved in many, yea ſometimes in ſuch abundance, that piſſing the quantity of half a gallon in a day and a night, the Patients have recovered their healths in a ſhort time even to a miracle.

And chiefly] Lixivials.

The reaſon and manner of their operation enquired into.

We have unfolded in a former Treatiſe, by what manner and faſhion Diureticks of ſeveral kinds do operate, and after what manner they affect the bowels, blood and other humours: But that in thoſe that labour under an Anaſarca, Medicines endowed with a fixt and lixivial Salt, expell Urine more than thoſe of an acid, alcali, or volatile Salt, the reaſon as I judge is this, *viz.* in thoſe affected with this diſeaſe, after the fermentation and ſanguifying vertue of the blood failing, the watery and crude humours heaped up as well in its maſs as in the habit of the body, do there remain almoſt immovable for a long time, till at laſt they (as the manner is of watery Juices long ſtagnating) do wax ſoure; wherefore the lixivial particles of the Medicine ſpread abroad in the blood preſently boyl up with the acids of the waters, which while they ferment and move, they ſtirre up in the whole maſs of Blood, a notable and excretive fermentation; inſomuch that all the particles being put into motion,

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not only the watery and ſuperfluous being thruſt from the reſt, are diſcharged by the Reins; but alſo the innate and active particles of the blood it ſelf, unfold themſelves from the more groſs with which they were involved, and laſtly riſing up, they begin to reſume their fermenting power, and to ſanguifie.

Take of the Aſhes of Broom or Wormwood, or of the twigs of a Vine calcined to whiteneſs and ſifted, four ounces, put them into a glaſs bottle with a quart of White-wine, let them digeſt cloſe ſtopt and warm for three or four hours, after ſtrain it; the doſe from ſix to eight ounces twice a day. Forms of lixivial Diuretick.

Take of white Tartar calcined with Nitre, and after melted in a Crucible to blueneſs three ounces, ſmall Spirit of Wine a pound and a half, water of Snails and Earth-worms, of each four ounces, digeſt them in a Sand furnace for two days: the doſe of the clear liquor from two to three ounces, with four ounces of the decoction of Kneeholm and Burdock-roots in Ale.

For ordinary Drink:

Take of the white Aſhes of Broom cleanſed two pound, put them into a little Bag, with three ounces of Saſſafras, one ounce of leſſer Galangal, an ounce and a half of Juniper-berries, and as much of Carrot-ſeeds, make a bag for four gallons of Ale, after ſeven or eight dayes begin to draw it.

3. *Diaphoreticks* do often very notably help in a Leucophlegmatia (which is the commencing or declination of an Anaſarca) but in this diſeaſe confirmed, they are wont to be more convenient than in other kinds of Dropſies. And although from the beginning they cannot cauſe Sweats, by reaſon of the habit of body ſurrounded as it were with a more thick marſh, however while they exagitate the blood, they cauſe the innate active particles thereof, being before dormant, and half overwhelmed, to be raiſed up and diſpoſed towards fermentation, and alſo they cauſe all the excrementitious, and chiefly the watery, to be raiſed into motion, ſo that preſently flowing out of their Receptacles, they may the more readily and eaſily find way by ſiege or Urine, and oftentimes in ſome part by tranſpiration. But truly after the waters being poured out by purgation, the morbific matter is diminiſhed ſo much, that the bulk of the body and the ſwelling of the members begin to abate, the reliques of the humour are beſt conſumed by a moderate tranſpiration and conſtant ſweating. *Diaphoreticks.*

We have deſcribed before the number and forms of Hydroticks; as to the preſent purpoſe for curing an Anaſarca, thoſe chiefly are fit which are given in a larger doſe; for they whoſe quantity is very ſmall, their active particles being overwhelmed in the waters, are loſt before being infuſed into the blood they can exert their ſtrength. Wherefore, Spirits, whether armoniack or vinous, as alſo Tinctures and Elixirs, yea and powders, are more rarely uſed in this diſeaſe, becauſe they effect little in a leſſer doſe, and if they be exhibited in a very large one, they often hurt the bowels by their outrage; But thoſe things are rather choſen, which being taken hot, and in a full draught, are able to paſs into the whole blood not weakned; of which ſort, in the firſt place are Decoctions of Woods, and Roots, whoſe particles being agreeable enough to the Blood, and not to be tamed thereby, do paſs through the whole maſs thereof, and do exert their Elaſtic power by moving together all the humours. *Diaphoreticks profit which are taken in a larger doſe.*

Take of the Shavings of Lignum Vitæ ſix ounces, Saſſaphras two ounces, of each of the Sanders ſix drams, ſhavings of Ivory, Harts-horn, of each three drams, let them be infuſed and boyled in eight pound of Spring-water to half; adding of Calamus Aromaticus, leſſer Galangal, Burdock and Butter-Bur-roots, of each one ounce, the leaves of Sage, Germander, dryed, of each two handfuls, let the ſtrained liquor be kept for uſe; the doſe from eight to ten ounces twice in a day warm; to every doſe may be added 20 or 25 drops of Spirit of Sal Armoniack drawn with Amber, or of Spirit of Soot, or half a dram, or a dram, of Tincture of Salt of Tartar. Forms thereof.

Hitherto of inward Hydragogue Medicines, which cauſe the Lympha to be drawn forth, either by alluring it inwards towards the guts, or by driving it forth to the Reins or pores of the skin. Beſides, there are certain outward adminiſtrations in uſe, by which the water accumulated within the habit of the body are moved toge- *External Hydragogues.*

ther, and ſo are either generally diſpoſed to go forth by ſweating, or Urine, or particularly are ſent out forthwith, a vent being made in ſome private places.

The chief Kinds of them, and the manner of their Adminiſtration.

In the firſt rank are placed Frictions, Liniments, Fomentations and Baths as well dry as moiſt: Then thoſe particular things that bring out waters are, Veſicatories, and things that bring the Skin to an Eſchar, and prickings by a Needle. We will treat briefly on each of theſe, or at leaſt of the principal of them, as far as they have reference to this diſeaſe.

1. *Frictions.*

1. Frictions do frequently afford advantagious ſucceſs in a Leucophlegmatia and an Anaſarca: for when the habit of the body is not only filled with a watery illuvies gathered there together, ſo that nothing can evaporate, but that the extern parts grow cold by reaſon of the approach of blood towards them being ſtopt, often and ſtrong frictions do move together the ſtagnating waters, and diſſipate them from thence in ſome meaſure, and alſo recall again the blood by opening the paſſages into thoſe parts from whence it was baniſhed; wherefore, not only the ſwoln members, but alſo the whole body once or twice in a day, is expedient to be rubbed with a courſe Cloth, or with a little Bruſh now ordinarily prepared for that purpoſe.

2. *Liniments, and,* 3. *Fomentations.*

2. 3. With or after Frictions, Liniments and Fomentations are ſometimes convenient. They are prepared either of Salts, and other Minerals diſſolv'd, or from hot and diſcuſſing Vegetables, with the fæces of Wine boyl'd in water, the hot application whereof opens the pores, moves together more amply the accumulated waters, and diſcuſſes them, and alſo enlarges the compaſs of the bloody Circuit, the watery heap being ſomewhat diſſipated. Let the Liniments conſiſt of Sulphur, and Salts of a diverſe kind, or of Quick-lime, and other Minerals, which being powdered and mixed with the mucilaginous Extracts of ſharp Herbs, are reduced into the form of an Unguent; to which let a fit quantity of Oyl of Scorpions be added, for the better conſiſtency. Moreover this Oyl (ſo it be genuine) applyed by it ſelf, doth frequently afford notable help. I knew a Boy much ſwell'd with an univerſal Anaſarca, who was cured by this Remedy alone: for his mother (I know not by whoſe advice) anointed his whole body morning and evening with Oyl of Scorpions, ſtrongly rubbing all the parts with her hot hand; by which act within three dayes he began to pour forth abundance of Urine, and when he had continued piſſing ſo for ſome dayes, the ſwelling vaniſhing by little and little, he became ſound.

4. *Baths.*

4. Baths are not convenient in any Dropſie but an Anaſarca, and not for this unleſs in a Diatheſis or Declination. For ſeeing the Blood from the heat thereof, encompaſſing the whole Body, being made boyling and ſtirr'd up, every where puts in motion the waters formerly ſtagnating, and ſwallowing them up into it ſelf, conveys them variouſly away; the danger is, leſt (as frequently it falls out) receiving them out of the habit of the body into its own maſs, it ſhould depoſe them preſently into the Præcordia or the Brain: for there is nothing more uſual than an affection of thoſe parts, *viz.* an Aſthma or Apoplexie to come upon Hydropicks by unſeaſonable bathing. But when the conjunct cauſe of the diſeaſe (*viz.* a Swelling) becomes moderate, or not much, a Bath of water impregnated with Salts and Sulphur, or a Hot-houſe, by which a gentle Sweat is promoted, is frequently adminiſtred with ſucceſs: As for the Stew it is more expedient, and oft-times notably helps, that the Patients be placed in fitting Seats in Salt-houſes, near the Furnaces wherein Mineral Waters are boyled into Salt.

5. *Veſicatories.*

5. Veſicatories ſend out abundantly the waters between the skin, and often too profuſely. Touching the manner how they operate we will treat more ſpecially hereafter; in the mean time we adviſe, that they are very cautiouſly to be exhibited to Hydropicks, for that Epiſpaſticks of this kind, applyed to the ſwell'd places, do make the Emiſſarie too open, by which apertion the water in the firſt place burſting out, draws oftentimes a great illuvies after it from the neighbouring parts, whence immediately enſues a great proſtration of the Spirits. Moreover, ſometimes the place is ſo ſuddenly emptyed, that being deſtitute of heat and ſpirits, it is in a ſhort time ſphacelated or mortified; wherefore this Medicine is ſeldom applyed to the Legs, or the Feet of Hydropical perſons, where the heat is weak, and the humour greateſt, but ſometimes to the Thighs and Arms with ſecurity (as often as there ſhall be need.)

6. *Eſcharoticks.*

6. *Eſcharoticks* are adminiſtred a little ſafer than Veſicatories, to the ſwell'd places, becauſe from this Emiſſary the flux of waters happens not ſo headlong and abundant at firſt: but commencing moderately grows up by little and little to a great ſtream,

ſtream, which Nature (after that by degrees it is accuſtomed thereunto) endures the better. Moreover, there is leſs fear of a Gangrene from an Eſcharotick than from a Veſicatory, becauſe in that application the part, whoſe union is diſſolved, is defended by the Eſchar againſt the loſs of heat. I have known ſometimes an illiterate and rude Empirick, who frequently by an Eſcharotick did evacuate with ſucceſs the members of hydropick perſons, however ſwell'd, by the enſuing manner: to wit, he fomented the legs evening and morning with the Decoction of Dwarf-Elder, Wormwood, Cammomile and other hot herbs put into the Lees of Ale or Wine; and between the times of the Fomentations he applyed a Cataplaſm prepared of the maſſe of that Decoction with Bran; after he had uſed theſe for three dayes, he covered both legs and feet with a Plaiſter of *Burgundy* Pitch, leaving only a ſmall hole on each Calf, about the bigneſs of a Nut, in which places he put an Eſcharotick, on the bare skin, of the Aſhes of Aſhen-bark: which after twelve hours being removed, a ſmall Eſchar was left, from whoſe pores water was wont at firſt ſlowly to ſweat out, afterwards day by day a little more plentifully to drop out, and afterward (the Eſchar falling off) it uſed to flow out more abundantly as from an open Spring untill it had drein'd the whole leg both beneath and above.

The empirical manner of Eſcharoticks.

7. There remains another manner (not inferiour though leſs uſed than the former) of draining out the waters between the skin, *viz.* by the pricking of a Needle; which likewiſe ought cautiouſly, and minutely to be uſed, leſt a headlong and too great efflux of waters be provok'd thereby. Take an ordinary Needle (ſuch as Taylors uſe) and let it be thruſt into the skin, pricking over the place chiefly ſwelled, only ſo far that blood follow not: and ſo at one time let ſix or ſeven little holes be made, a thumbs breadth diſtant from each other; from every little hole the water will iſſue forth by drops, and ſo it will contiually drop out untill all the ſwelling vaniſh about the place ſo pricked; afterwards, the next time after twelve hours, another while after 18 or 24 hours, let the ſame pricking be exerciſed in another part of the ſame thigh, or of the other; and afterwards once or twice a day in this or that member, or in both together, or in more places, let ſuch Emiſſaries of the water between the skin be excited. For in truth after this manner the hydropick illuvies may be exhauſted more plentifully and ſafely than from any other outward Chirurgery; In the mean time if the new proviſion thereof be provided againſt by inward Phyſick, the diſeaſe will be the eaſier cured. Moreover in a deſperate Dropſie life is beſt prolonged by ſuch an adminiſtration, for that the waters being exhauſted continually by thoſe outward Emiſſaries, the inner inundation of life is longer protracted. Not long ſince an old man aged ſeventy years, overwhelmed with a Dropſie over his whole body, by the help of this Remedy only, remained living for many moneths beyond expectation, and raiſed his head above the waters.

7. Pricking with a Needle.

Hitherto of the Kinds and Forms of Remedies ſuggeſted by the firſt Indication, *viz.* the Curative; what belongs to the other, to wit the Preſervatory, which reſpects the temperature and ſanguifying power of the Blood to be reſtored, it offers Medicines of that ſort which being endowed with more hot and Elaſtick particles, revive the active or depreſſed Principles of the maſs of blood, or cauſe thoſe conſumed to be repaired, for which end Remedies commonly called Altering are wont to be preſcribed under the form of an Electuary, Powder, Pills, diſtilled Water, Julep, Apozeme and Diet, to which alſo Spirits, Tinctures, Elixirs, are ſometimes added, for the better efficacy. We will propound one or two Examples of each of theſe.

The ſecond Indication preſervatory what kind of Remedies it ſuggeſts.

Forms of them.

1. *Take of Conſerve of Roman Wormwood, Scurvy-graſs, the yellow Rindes of Oranges, of each two ounces, Winters-bark two drams, Species Diacurcumæ a dram and a half, of Steel prepared with Sulphur three drams, Syrup of Citron-peels what ſuffices to make an Electuary, the doſe two drams morning and evening, drinking after a draught of the Julep, or three or four ounces of the diſtilled water.*

1. Electuary.

Chalybeate Medicines notably help in this Diſeaſe, as in the green ſickneſs of Virgins, infomuch that frequently the whole or chief ſcope of curing depends upon this kind of Remedy; yet we are to obſerve, that not all Medicines of this kind are equally convenient in theſe caſes: for thoſe which are chiefly in uſe, *viz.* *Salt of Steel*, or *Vitriol of Mars*, and others prepared with acids, and deprived totally of Sulphur, do not help, inaſmuch as they do not promote the fermentation of the blood, but rather on the contrary fix it, being too wild or elaſtick. But for an Anaſarca or any watery

Chalybeates profit much in this Diſeaſe.

But only thoſe endued with Sulphur.

watery tumours, in a cachectick habit of the body, Chalybeates of that ſort are given, wherein the ſulphureous particles are left, and are predominant; as in the firſt place the Filings of Iron, and the Scales, reduced into a fine Powder, alſo Steel diſſolved with Sulphur, and powdered. The powders of this being taken, are preſently diſſolved by the acid Salts within our body, whence the ſulphureous metallick particles being ſet free, and brought into the blood, they ferment the whole maſs thereof, and revive the like particles in the ſame, which before lay dormant, and being conjoyned therewith, they give vigour to the blood, and renew its ſanguifying power being formerly depreſſed. Wherefore we may obſerve by uſing but a little Chalybeates of this ſort, the green and yellow colour of the face is converted into a florid.

2. *Powders.* 2. *Take of the compound Powder of Aron-roots, of Winters bark, of each three drams, leſſer Galangals, Cubebs, of each a dram and a half, of Steel prepared with Sulphur half an ounce, Sugar of Roſemary flowers ſix drams, make a Powder, divide it into twenty parts. One part is the doſe, morning and evening, with a draught of the ſudoriferous Decoction before preſcribed.*

3. *Pills.* 3. *Take half an ounce of the gummous Extract reſiding after the diſtillation of the Elixir Vitæ of Quercetane, powder of Earth-worms two drams, leſſer Galangal, Winters-bark, of each one dram and a half, Salt of Wormwood two drams, of Ruſt of Iron two drams and a half, Balſam of Peru one dram, Tincture of Salt of Tartar two drams, Balſamum Capivii what ſuffices to make a maſs to be formed into ſmall Pills, the doſe half a dram evening and morning, drinking after it three ounces of the Julep or the diſtilled water following.*

4. *Julep.* 4. *Take of the water of Elder-flowers, of the juice of their Berryes fermented, of each one pound, water of Earth-worms magiſtral, of Rhadiſh compound, of* Aqua Mirabilis, *of each two ounces, Syrup of the juice of Elder-berries two ounces, mix them and make a Julep.*

5. *Diſtilled water.* 5. *Take the leaves of Garden Scurvy-graſs, of Hedge-Muſtard, of Pepper-wort, of each ſix handfuls, of the Roots of Calamus Aromaticus, Galangal, of* Zedoaria, *Orris of* Florence, *of Elder, Aron, of each ſix ounces, Winters-bark,* Jamaica *Pepper, of each three ounces, Juniper-berries four ounces, Cloves, Ginger and Nutmegs, of each one ounce, ſlice and bruiſe them, and pour upon them eight pound of old Rheniſh-Wine; diſtill it in common Organs, let the whole Liquor be mixt.*

6,7. *Decoction.* 6, 7. An Anti-hydropick Decoction is deſcribed above, among the Diaphoreticks. A Diet-drink is to be taken inſtead of Ale, and is to be made according to the enſuing form.

Diet-drink. *Take of Shavings of Guaiacum, Saſſafras, of each four ounces,* Florence *Orris-roots, Calamus Aromaticus, Galangal, Enula-campane, of each one ounce and a half, of Juniper and Bay-berries, of each two ounces, Anniſeeds, Carue, Sweet-fennel, Coriander and Dill-ſeeds, of each one ounce, long Pepper and Cubebs, of each an ounce and a half, Cloves, Nutmegs and Ginger, of each half an ounce,* Jamaica *Pepper two ounces, the dryed leaves of Sage, Wood-ſage, Calamint, Agrimonie, of each one handful, Liquoriſh four ounces ſliced and bruiſed, boyl it in four gallons of Spring-water to half, the ſtrained liquor being cold, let it be kept in glaſs Bottles for uſe; with the conſtant uſe of this drink, I have known many laborring with a deplorable Anaſarca to be made well. Among many Examples of Dropſies cured, I ſhall propound but one.*

An Example of the Cure of an Anaſarca Dropſie. A certain ſtrong man of a middle age, after he had contracted an Epidemical Quartan Feavour, and being evilly handled from its beginning, had laboured with it above a year, and in the mean while had uſed an ill courſe of Diet, fell into an Anaſarca, which afterwards in a ſhort ſpace augmented hugely, by reaſon he indulged himſelf more freely to drink for quenching his thirſt (which was outragious) ſo that all his members being ſwollen from head to foot, and over the very Abdomen it ſelf, he could not turn in his bed from ſide to ſide without help.

The Prognoſtick and Cure of the Diſeaſe. When I firſt viſited this man, and deſpairing of a Cure (as the Phyſitian in *Celſus* lib. 3. Chap. 21. *who denyed that any intemperate Hydropick could poſſibly be cured*) I immediately affirmed this Prognoſtick, *That he would dye in a ſhort time unleſs he abſtained from drink.* Whereunto he replying, profeſt he would not drink in a weeks

weeks ſpace, provided he might be helped; and indeed did as he ſaid, although being very thirſty, for ſix or ſeven dayes he ſcarce took any liquid thing in his mouth, but what was Medicine; and during that time, when in the mean while he took Hydragogues, Catharticks and Diureticks, and any other things preſcribed carefully, he became much better, and afterwards the method (before deſcribed) ſomewhile being adminiſtred, he was reſtored to his entire health, and even now though five years ſince lives and continues ſound.

There remain certain other ſplanchnical Affections, touching the Remedies whereof, according to the enſuing method, we ſhould here have treated, notwithſtanding I have performed this task already for the moſt part under other titles; for as is above intimated, Remedies which concern the Kidnies we have for the moſt part unfolded under the rank of Diureticks, and thoſe which concern the Stomach and Guts, under that of Vomits and Purges; what relates to the Spleen we have finiſhed in the Hypochondriac Pathologie; and what to the Womb in the Hyſterical. As to what appertains to the Genital parts and their Diſeaſes, and help, I reſerve for another time and place; it behoves me now next of all, after treating hitherto of the inward Pharmacie, to diſcourſe ſomething of the outward, and of the Reaſon or Ætiologie of the adminiſtrations thereof, which ſhall be done in the next Section, beginning with Phlebotomie, that great Remedy.

SECT.

SECT. III. CHAP. I.

Of Phlebotomie.

Phlebotomie a very general and ancient medicine.

AMong the universal Documents of Philosophie, or aids of Physick, none either in Theory or Practice hath been more ancient or general than the speculation of the Blood and letting it out by opening a Vein. As to the former we have in other places often explicated the nature and constitutive parts of the Blood, we have unfolded the Virtues and Energy of the same, and have demonstrated that it is in truth enkindled, and that from the burning thereof the flame of animal life, as of a Lamp, doth begin and receives continuation: But as to what relates to Phlebotomie, all Authors of every age have made mention thereof: Moreover the same was ever in Medicinal use with all Nations howsoever barbarous or rude. Neither is it a wonder, for truely Nature it self in the first place hath taught the necessity, and way of that part of Chirurgery; Even the Divine Law commanding the Rite of Circumcision, as a Symbol thereof, seems to intimate that the innate impurities of Humane Nature ought to be purged in some manner by letting out the blood.

Nature shews it by Hæmorrhagies.

That we may methodically discourse of this great Remedie, we ought first to consider, by what means, also for what causes and ends, the letting of blood either happens spontaneously to Nature, or is indicated by the Physitian; then secondly we will annex the chief effects of this Evacuation, as well good as bad, whether advantageous or disadvantageous, and together propound certain Rules and Cautions to be observed, about due administration of Phlebotomie.

As to the former, spontaneous Hæmorrhagies (which suggest the use of Phlebotomy) whereas they are manifold and of diverse kinds, they are usually reduced to these two heads or ranks: to wit, they are denominated either critical, Nature endeavouring something good and wholsome; or symptomatical, which for the most part happen, she being dejected from her government, and being altogether out of order. The bloody eruptions of the former kind are again distinguished; that they are either raised without a Feaver, and are either periodical, which happen often at set seasons, as the Flowers in Women, and the Hemorrhoids in some, and in others the solemn or otherwise accustomed opening of the Nostrils; which very often succeed according to the great changes of the Year, or alterations of the Air: or they are fleeting and uncertain, as when blood doth advantageously break out of those places, and of many others, one while in this part, another while in that part of the body. Moreover, bloody Crises do sometimes happen in a Feaver, and do often put an end to it, as *Hippocrates* long ago observed, and is now manifest by very common observation. The blood breaks out in all these cases, inasmuch as being turgid, and above measure rarified within the vessels, it desires a larger space, wherefore, unless some portion thereof give way, the whole mass runs the hazard of being constipated, and as well the motion thereof to be hindered, as the enkindling to be suffocated, and the temperature to be perverted.

Critical either with or without a feaver.

The causes thereof proceed either,

For there are two chief Reasons or Causes, wherefore such turgescencies of the Blood do arise; inasmuch as its liquor is as well inflammable, as fermentative.

1. From the kindling of the blood.

1. As to the former of these, that the Blood may be duely enkindled for the supporting Life, and the due exercise of the functions thereof, it behoves that the innate sulphureous particles of it be proportion'd unto the Nitrous adventitious ones from the Air. Therefore as often as the Blood being very boyling and rarified, is much opened and loosened in its own consistence, so that the Sulphur being dissolved, is kindled in greater plenty, there is a most frequent and painfull breathing instituted for the drawing in of a more plentifull Nitre. Now if the Sulphur abounding in this manner, cannot be wasted by burning, nor the vital flame regulated, the next course immediately to diminish the sulphureous fuel, is, that a certain portion of the rarified Blood have vent. From hence, not only in Feavers, but after drinking Wine, Bathings, being in the Sun, and other accidents by which the Blood grows very turgent, either an Hæmorrhagia of its own accord succeeds, or there is often need to supply the defect of such a spontaneous evacuation by Phlebotomie. But that such kind

kind of effuſions of Blood, whether made by Nature or Chirurgery, are commonly reported to bridle its heat or raging; really they do this only inaſmuch as they diminiſh the kindling of the blood, by withdrawing part of the ſulphureous fuel, as Oyl from a Lamp.

2. But moreover in the ſecond place, the Blood, inaſmuch as it is a fermentative liquor, it is apt alſo to be extravaſated. Namely, if at any time any heterogeneous thing, and not miſcible, be confounded with its liquor, it grows hot very much, like Wine in a Veſſel, and boyls up in the Veſſels to exclude that diſagreeable thing, which if it can neither ſubdue, nor turn off by Sweat, Urine, or otherwiſe, the Blood it ſelf excludes part of it ſelf as a Vehicle for carrying that matter forth, whereſoever a vent is to be found. For this reaſon (*viz.* that any diſagreeable or indomitable thing may be turn'd out of the maſs of blood) divers ſorts of Hemorrhagies happen, as well in Feavers as without them; all which are excited by Nature for an intention of good, as alſo thoſe by which the too much enkindling of the Blood is depreſſed: But that frequently it happens otherwiſe, ought to be imputed to divers accidents and circumſtances. But for the moſt part the failure about the ſpontaneous Hemorrhagies critically inſtituted, is either in the firſt place becauſe the blood while it is boyling knows no meaſure of flowing out, and therefore being ſtirr'd into violence, it flows out too much; or ſecondly, becauſe the mouths of the veſſels once opened do not preſently cloſe again, nor are able to be ſhut; or Thirdly, becauſe Nature endeavouring an excretion of blood, doth it by places more open, but often inconvenient; as when an Hemorrhage happens through the Lungs, the Kidneys, Guts, or other Bowels, which therefore paſs from a Critical into a Symptomical and often into a malignant Hæmorrhage.

2. From its Fermentation.

1. Critical Hemorrhagies ſometimes turn into ſymptomatical.

Neither only by theſe means, but by many other failings of Nature, or impediments, do Symptomatical Hæmorrhagies happen, in all which either the Blood it ſelf, or the Veſſels containing it, or both of them together, are wont to be chiefly in fault.

2. Symptomatical Hemorrhagies ariſe either,

1. In the firſt place, the Blood, beſides the reaſons above mentioned, (to wit, forаſmuch as it becomes inflammable or fermentable above meaſure) is apt alſo to be extravaſated, becauſe either its liquor being empoiſoned, or otherwiſe corrupted, cannot retain its due mixture, but being apt to coagulate or putrifie, divides it ſelf into parts; and whilſt ſome of them being here and there planted, ſending forth ſpots, wheals, and other brands of Malignity, do diſcolour the Fleſh and the Skin, and obſtruct the proper paſſages; others otherwiſe running out and breaking forth whereſoever there is a vent found, do produce bloody Excretions in divers places, as is commonly diſcerned in the Plague, Small-pox, Meaſles, and malignant Feavers; yea perhaps this in ſome meaſure is the reaſon why in ſcorbutick Diſtempers, as ſpots and marks, ſo alſo Hæmorrhagies are ſo familiar.

Firſt by the fault of the blood.

2. Secondly, The veſſels bringing Blood being faulty many and divers ways, but chiefly in theſe three, do appear the cauſe of a ſymptomatical Hæmorrhage, *viz.* In the firſt place, if perhaps any where ſome of them are obſtructed, as often as the blood aſſumes a more rapid motion, either in the ſame place, or in the contiguous parts, and alſo ſometimes in remote parts it is conſtrained to burſt out. Frequently from ſuch a cauſe an Hæmoptoe proceeds; moreover Spitting of blood, and the Hæmorrhage of the Noſtrils do often follow the ſuppreſſion of the Terms and Hemorrhoids. Secondly, the little mouths of the veſſels (by reaſon of the fleſhy Fibres being looſened or reſolved by which they are clos'd) ſometimes are ill formed, ſo that when the ends of the Arteries do gape too much, the little mouths of the veins do cloſe. By reaſon of this affection, Scorbutical and Cachectical perſons, are found obnoxious to Hæmorrhagies, as we have remarkt in another place. But Thirdly, it frequently comes to paſs that the Veſſels, being ſo evilly formed, are alſo convulſively affected, and ſo the morbific cauſe being as it were doubled, this evil is much encreaſed, inſomuch that the muſcular fibres of the Veſſels being inordinately contracted, cauſe ſudden and violent fluxes of the blood, one while towards the upper parts, another while towards the lower; and ſo their little mouths being open in the mean time, they provoke prodigious Hæmorrhagies. For I have obſerved in ſome perſons, when the current of blood was ſmall enough, with a ſmall and weak pulſe, the Convulſions of the Veſſels generated in ſome place, and propagated under the likeneſs of wind running to and fro in the body, to drive more impetuouſly the blood, however ſlow of it ſelf, and to conſtrain it into violent eruptions; and in caſes of this ſort,

Secondly, The fault of the Veſſels, for that they are ill formed.

Thirdly, Foraſmuch as they are convulſively affected.

ſort, when Phlebotomies and Medicines refrigerating and tempering the blood have not at all profited, the greateſt relief hath been found from Narcoticks, Antiſpaſmodicks and Ligatures.

3. From the blood and veſſels being both in fault.

3. Thirdly, If perhaps it ſhall happen that theſe faults of the Blood and Veſſels are complicated, and put forth their miſchiefs joyntly at once; from thence it will be of neceſſity that this evil will be more intenſe, and more frequent and prodigious Hæmorrhagies will be raiſed; the reaſons of which as they appear plain enough by what goes before, it will be neither neceſſary nor ſeaſonable here longer to dwell upon explicating of them; but rather, whereas we have deſigned hitherto the acts of Nature about ſpontaneous effuſion of Blood, and its courſes both rightly inſtituted, and alſo wrongfully and evilly conſtrained; now it behoves us next to declare, how far Art (for the moſt part the Ape of Nature, and ſometimes Miſtris or Moderatrix thereof,) can act likewiſe well, or better about letting of blood, and how ſometimes it is wont to ſucceed worſe.

Emiſſion of the Blood procured by art.

We advertiſe of theſe things in general, that a Phyſitian imitates Nature in ſome caſes of letting blood, exceeds her in other caſes, and frequently regulates and reduces her when acting amiſs. Moreover, there are ſome caſes wherein Nature excells far the efficacy of Art concerning bloody excretions; briefly of each of theſe.

1. It either imitates Nature.

Therefore in the firſt place, in whatever affects, ſpontaneous Hæmorrhagies are wont to bring help, when theſe are wanting, Phyſick the Handmaid of Nature rightly ſubſtitutes Phlebotomie. Therefore, if perchance the Blood be immoderately kindled by reaſon of its Sulphur being too much looſened and advanc'd, by breathing a vein, what is ſuperfluous of that inflammable fuel will flow out, as alſo the immoderate turgeſcency of Blood, by reaſon of ſomewhat untamable being mixed with it, will be allay'd by this courſe. Wherefore letting of blood is advantageouſly adminiſtred, as well againſt continual Feavers, which proceed from the former cauſe, as intermittent Feavers, whoſe fits proceed from the latter cauſe. Alſo in like manner, as often as an accuſtomed evacuation being ſuppreſſed, or a humour driven back from the ourward parts, or a ſudden ſtoppage of the pores, or if a Surfeit, drinking of Wine, or other accidents of this nature, cauſe a turgeſcency of blood (inaſmuch as they daſh heterogeneous particles againſt it) Phlebotomie is uſually the moſt ready Remedy.

2. Or excells and regulates it.

Secondly, Phyſick in Blood-letting, not only imitates Nature, but often excells it; and alſo ſuccours her being weakened, and reduces her often erring. For if at any time the blood ſtruck with violence, ruſhes in a heap againſt any part, and either preſently breaks out in the ſame place, or abundantly gathered together engenders an Inflammation, a vein being pierced in a remote place, ſtops that preternatural tendency of the blood, and frequently carryes away the bleeding, or inflammation. Wherefore, in a Pleuriſie, a Squinancy, a Peripneumonia, in ſpitting or vomiting of blood, when Nature is vanquiſhed, or being outragious, ſeems to caſt violent hands upon her ſelf, Chirurgery recalling the blood to another part, and ſending it out, reſtores the matter that was almoſt deſperate.

Moreover Phyſick frequently reſtrains or reduces Nature, when too prodigal or prevaricating in pouring out of the blood: for in truth all immoderate Hæmorrhagies do want Bridles, not Spurs. But in the Plague, Small-pox and Meaſles broke out, and in malignant Feavers, ſometimes the blood ſpontaneouſly flowing out, portends for the moſt part evil; therefore in thoſe affects ſtyptic Remedies, or things ſtopping the eruption of blood, are more convenient than breathing of a Vein.

3. Or Art outdone by Nature.

Thirdly, Notwithſtanding on the contrary there are caſes of ſhedding blood by Nature, which Phyſick can no way imitate, neither if they chance to fail, can be ſupplyed by Phlebotomy. In Feavers about the Criſis of the Diſeaſe, to wit, after the digeſtion of the matter, that is to ſay, the preparation for Excretion, ſpontaneous Hæmorrhagies if coming in time, do far excell any Phlebotomie which none knows the beſt ſeaſon of; Moreover, the Fluxes of the Terms and Hæmorrhoids happening by Natures inſtinct, are more advantageous than the miſſion of blood provok'd by Art in any of thoſe places.

Phlebotomy and ſpontaneous Hæmorrhagies differ as to the ſubject and matter.

Between Phlebotomie and ſpontaneous Hæmorrhagies, there is yet a notable difference, (although not of great moment in Phyſical practice) *viz.* both as to the Subject and Matter of either of them; for in this the blood being florid, and throughly Scarlet, doth for the moſt part only flow out of the Arteries, but in the other Evacuation the Blood being of a black purple with a Scarlet Cream, is only drawn out of the vein.

vein. Whence the ſtream of Blood, which is one within all the veſſels and throughout continuous, acquires ſuch a diverſe kind of appearance, ſeeing we have ſhewed in another place, it is not our preſent purpoſe to make any further ſearch into this Ætiologie; becauſe it concerns not much to the curing any diſtemper, out of what veſſel the blood be let, provided it flow out largely: But that the ancients do in ſome caſes commend Arteriotomie, and prefer it to an inciſion of a vein, the Circulation of Blood not being then known, we have elſewhere diſcourſed how well it may be done.

The uſe and effects of Phlebotomy.

Hitherto of Phlebotomie compared with a ſpontaneous Hæmorrhage; now our next buſineſs is, to deſcribe the uſe and effects thereof, as well good as bad, in Phyſical practice. Wherefore we will firſt ſhew in general what alteration of the maſs of Blood this Evacuation brings; then what diſeaſes it more immediately reſpects, either of the whole body, or its particular parts.

How it affects and alters the Blood.

About the former, it is obvious enough that the blood is altered by breathing a vein, both as to its quantity and temperament, and as to its diſpoſition and motion.

1. Diminiſhes its quantity.

The firſt and moſt common Indication of Phlebotomie, is, that the plenty of blood be diminiſhed by this Adminiſtration. And truly this is a vulgar Remedy, to remove or provide againſt a Plethora. Any one, though of the vulgar ſort, growing to a full habit of body, lets blood without the advice of a Phyſitian; Moreover Ruſticks and Countrey-men for healths ſake, once or twice in a year cauſe blood to be drawn from themſelves and their Beaſts. But although this cuſtom is grown ſo much in uſe with ſome prodigal of their blood, that they breathe a Vein on the ſmalleſt occaſion, and ſometimes without any manifeſt cauſe; notwithſtanding we may find many others no leſs obſtinate againſt this cuſtome, inſomuch that for no cauſe will they loſe any blood, unleſs the greateſt neceſſities be urgent.

Emiſſion of the Blood is not to be either too prodigally, or too ſlenderly made.

The reaſons of the former hinted at.

Upon this matter (whereas Arguments are alleadged on either part,) that I may in few words determine what ſeems fit to be ordained, in the firſt place it is requiſite we grant, that letting blood is convenient againſt a Plethora either made, or beginning: for by no other Remedy are the evils of that Affection wont to be better removed or provided againſt. Notwithſtanding, the neceſſity of this evacuation ought to be declined as much as may be; becauſe from thence (as we have intimated elſewhere) the blood becomes more ſulphureous, and leſs ſalt, and for that reaſon it moſt commonly diſpoſes all men to be feaveriſh and to be fat. Moreover the Great Remedy Blood-letting, if it be proſtituted to every little occaſion, becomes leſs efficacious to any grand affections when need requires: To which we may adde, that according to the vulgar obſervation, by how much the more familiarly any one uſes Phlebotomy, he will the more frequently ſtand in need of it: for blood being emitted to avoid a Plethora, the reſt of the maſs will the ſooner riſe to a Plethora: far otherwiſe than is the opinion of ſome, who dread leſt the ſtore of blood be conſumed by frequent Phlebotomie; for that on the contrary by this means the quantity is more encreaſed, although the Craſis be the worſer: for ſo the blood having loſt much of its balſamick Salt, and preſervative againſt putreſaction, inſtead thereof, is filled with a pinguifying and more fiery Sulphur.

2. Phlebotomie amends the mixture of the Blood.

Secondly, Phlebotomie doth frequently correct the mixture and temperament of the blood in a manifold reſpect. For in the firſt place, if any thing heterogeneous be confounded with its maſs, which cannot be rightly digeſted, nor eaſily excerned and ſent away: a Vein being opened, the blood flowing out conveyes frequently much of the portion of that matter forth with it, inſomuch that the reſt may be either ſubdued or expell'd. For the orifice of a veſſel being opened, preſently the blood fermenting gathers together the extraneous particles as much as poſſible, and excludes that portion of it ſelf wherein many of them are heaped up: From hence we may obſerve the blood flowing out firſt and laſt to be well enough, when that emitted between appears corrupt. Alſo ſecondly, the blood declining from its temperament, is frequently reſtored by Phlebotomie. For when the maſs thereof by the Sulphur or fixt Salt, or both together being exalted, ſhall degenerate into ſharp, ſalt, or ſaline-ſulphureouſneſs, a portion of the blood being withdrawn, immediately a new fermentation thereof ariſes, and very often there is a tranſpoſition made of all the particles of that ſort, that afterwards the Spirits may a little emerge with the volatile Salt, and recover their dominion, the Sulphur, and fixt Salt (as is fitting) being ſubdued. For this reaſon it is that letting Blood doth not only confer great

It reſtores its temper.

help in Feavers, but alſo in the Scurvy, Jaundies, and beginning Conſumption; for the blood after the veſſels are emptyed, like the Stomach disburden'd, doth better digeſt and aſſimilate any humours ingeſted, and the more eaſily throws off and ſeparates whatever is heterogeneous.

Some diſtempers of the blood admit not Phlebotomy.

But if the mixture of Blood begins to be much looſned and become very bad, as in the Plague and malignant Feavers, we muſt altogether abſtain from Phlebotomie; for the blood being withdrawn, the ſtore of Spirits (whoſe only part it is to vindicate the maſs of blood from putrefaction and corruption) is diminiſhed, ſo that immediately all things tend to a deadly diſſolution. Moreover, if the Dyſcraſie of the blood ſhall be of that manner, that the more noble Principles, to wit, the Spirit, the volatile Salt and Sulphur, being depreſſed or conſumed, the watery and earthy particles predominate, the blood ought not to be ſent out, but preſerved even as the treaſure of life; for when the abundance of Spirits are ſo ſmall, any loſs of them doth cauſe all the functions to ſtagger, and gives way to the diſeaſe; wherefore in a Dropſie, Cachexia, Conſumption, and other Diſtempers, where the active Principles are greatly depreſſed, the opening a vein is almoſt the ſame thing as cutting the mans throat.

In ſome caſes about Phlebotomy it is very doubtfull.

In the before-mentioned caſes, where the temperament of blood is reſpected, it is eaſie to determine, whether Phlebotomie be convenient or not; but in ſome others, as in a putrid continual feaver, when upon this hinge Life and Death are turned, there is need of the greateſt deliberation: and ſo much the rather becauſe the event of the Diſeaſe, and the ſucceſs of all the accidents in its whole courſe, whether good or bad, is uſually imputed to Blood-letting, or its omiſſion: and from hence it is, that Phyſitians being ſolicitous to preſerve their own repute, do chiefly raiſe doubts in their conſultations of this matter. But truly in this difficult knot that we may not be led by the rumour of the vulgar (as it chances to happen) one while approving, another whiſe condemning Phlebotomie, but with more certain advice: we muſt conſider the ſtate of the Blood, the tendency of the morbific matter, and the ſtrength of Nature. Firſt as to the former, if in a putrid Feaver, the blood very much growing hot ſhall raiſe a great heat, with thirſt, watchings, and burning of the Jaws, and no eruption of abundant ſweat, nor puſhes appear, or is ſuddenly expected, opening of a vein is ſo clearly demonſtrated, that it is a wickedneſs to omit it; but on the contrary if in a languid body, a ſlow and remiſs Feaver, but continual, ariſes, with a weak Pulſe, let Blood-letting be ſpared, and the cleanſing thereof be procured by breathing Sweats, Urine, and bliſtering. Notwithſtanding, in a middle ſtate of Blood, and of a Feaver, Phlebotomy almoſt indifferent in it ſelf, is determined by other things. Therefore ſecondly we muſt weigh the tendency or flux of the morbific matter, which if it remain dull in the maſs of blood, and unfit to be ſeparated, and ſo (as it is frequently wont to be) inſtead of a Criſis, a tranſlation towards the head be made, and threaten the brain and nervous ſtock, the cutting of a vein ought ſeaſonably to be adminiſtred, whereby theſe evils may be provided againſt. Notwithſtanding, if that this matter being ſoon raiſed into a rage, and either ruſhing inwardly to the bowels of the nether Belly, provokes a huge Vomiting, or Dyſenterical affections, or being driven outwardly, ſeems to be about to bring the Small-pox, Meaſles, and other puſhes, every ſuch force of Nature, if good, ought not to be diſturbed, if evil, not to be made worſe by Phlebotomie; for in theſe caſes it is not only dangerous to let blood, but alſo very ſcandalous. Thirdly, about Phlebotomy to be adminiſtred in a doubtful caſe, we are to take heed to the ſtrength of the Patient; for in a healthful Conſtitution, a vigorous Age, the commencing of a Diſeaſe, and the functions both vital and animal being yet in a florid or indifferent eſtate, we may confidently preſcribe letting of blood, unleſs ſomething indicates the contrary. Notwithſtanding, when it is otherwiſe, as to thoſe conditions, we may not raſhly proceed to that Evacuation.

And chiefly in a continual putrid Feaver.

How the doubt is to be determined.

Thirdly, Phlebotomy corrects or ſtays the inordinate motions of the Blood.

Thirdly, the inordinate motions of the Blood, when being very much moved, as it were with fury, it either ruſhes impetuouſly one while into theſe parts, another while into thoſe, or transferres the noxious matter, are beſt reſtrained or reduced by Phlebotomy; wherefore in great Cephalalgies, in all ſoporiferous or convulſive invaſions, for Catarrhs, Ophthalmia's, and a Cough, Aſthma, fits of the Gout, and Stone, or Phlegmons, Eryſipelas's, alſo for many other Diſtempers, raiſed by the flowings of the Blood or Serum, an inciſion of the vein is commonly preſcribed, and indeed for the moſt part as with good ſucceſs, ſo alſo upon right Reaſon; for the Veſſels being emptyed,

emptyed, the blood having obtained a more free ſpace, is circulated pleaſantly and undiſturbedly, beſides, whatever is extravaſated of the Blood or Serum, is wont to be ſuckt up again and reduced into its courſe.

What Diſeaſes, and of what parts Blood-letting chiefly reſpects.

The Effects as well good as bad being thus ſhewn, which happen to the blood in the manifold ſtate thereof, by Phlebotomie, we will next make ſtrict examination what Diſeaſes chiefly, either of the whole body, or of any private Region that kind of Remedy doth more immediately regard. And firſt as to what relates to general Diſtempers, it is commonly enough known, that letting blood is indicated by a hot and dry temperament, and interdicted by a moiſt and cold. It is uſually propounded in every Feaver, but never in a Dropſie. Moreover, if we conſider particular Diſeaſes, there is no region or part of the Body, but as they rejoyce in the influence of vital as well as nutritious blood (as long as it is well) ſo as often as it is diſturbed in any place, or reaches out any diſagreeable or provocative thing, in place of benign Juice, it requires avocation and a letting out thereof. If I ſhould take notice of every ſingle caſe of this Indication, we ſhould here rehearſe almoſt the whole Pathologie of the humane body. An aking Head, a Brain oppreſs'd with blood, or overflowed with Serum (whence ſpring a world of evils) burning of the eyes, inflammation of the face, mouth and throat, all the diſeaſes of the Breaſt and Prækordia (inaſmuch as the diſorder of Blood affords a riſe or fuel to each of theſe) likewiſe obſtructions or inflammatory affections of the Liver, Spleen, and other Bowels; moreover, as a Plethora, and Athletick habit of the whole body, ſo alſo the tumours of each member, painful and convulſive paſſions, ſeem to accuſe the blood as Author of all the evil, and require its ſending out, as a certain kind of revenge.

After Phlebotomy being indicated theſe four things following ought to be conſidered.

In theſe and very many other diſtempers, if at any time Bleeding be clearly indicated, before it be performed four things ought to be conſidered, *viz.* In what place, by what manner and inſtrument, at what ſeaſon, and in what quantity the Blood ought to be taken away.

Firſt the place from whence Blood is to be taken.

Firſt, as to the former, although according to the Laws of the Circulation of the Blood, as oft as the maſs ſhould be diminiſhed, it differs little from what veſſel a part thereof be taken, provided it be large enough; notwithſtanding, for that beſides a general evacuation of the blood, ſometimes a particular one properly called Derivation (as when the blood is to be brought out of a private place where it is accumulated) and moreover a Revulſion, when it is to be called into this or that part, are intended; for that reaſon, in a humane Body there are appointed as it were various Boundaries, out of which, now by this, now by that, or by another vein, the blood may be emitted as occaſion is given, and for the uſes chiefly requiſite.

In ſome caſes from the Arm.

If therefore at any time an univerſal Evacuation of the blood be indicated, the median vein of the Arm is beſt to be opened, for this is eaſily opened being large enough, and whereas it equally flows from the whole body to the orifice thereof being open enough, by whoſe more free efflux not only a Plethora is taken away, but the greater veſſels being every where emptyed after this manner, the blood ſtagnating in any place, is brought into motion, and being extravaſated is again ſwallowed up into the veins; wherefore, in great diſtempers when the blood being heaped in the Brain, or Prækordia, does threaten ſudden deſtruction, the beſt way not only of general Evacuation, but of a Revulſion, is to ſend the blood by a full current out of the vein of the Arm, being largely open'd.

In others from the vein of the Forehead, Temples or Throat.

But if without any great Plethora the blood ought to be evacuated from the whole, and pulled back from the upper part of the body towards the inferiour, as in the ſuppreſſion of the menſtrual flux or Hemorrhoids, it will be rather fit to bleed in the Foot or ſedentary veſſels by Leeches. But if after the blood being evacuated from the whole, it be alſo to be derived from any private part where it is accumulated, let its drawing off be near the place affected. Hence in Cephalick Diſeaſes, we open the vein of the Forehead, of the Temples, or of the Throat. To cure Tumours, or pains raiſed in the Joynts, we cut a veſſel either beneath or near them, or draw out the blood by Cupping-glaſſes or Leeches. In like manner in diſtempers of the Thorax and nether Belly, either Cupping-glaſſes are applyed to the region ſuffering, or Leeches to the ſedentary veſſels.

The Cephalic Vein of the Arm, the Liver Vein, or the Salvatella erroneouſly ſo called.

But that ſome Veſſels are reported to bear a peculiar reſpect to certain Bowels, and that they ought to be lanced in their diſtempers; *viz.* ſuch are the outward brachial vein, which is ſaid to reſpect the head, and the inward the Liver, alſo the outer vein of the Hand tending to the Ring-finger, which is ſaid to reſpect the Spleen, and for

that cauſe this is called the Salvatella, and the former of them the Cephalick, and the other the Jecorary; all this is meerly a vulgar error, which being propt by no reaſon or Anatomical obſervation, I am ignorant whence it took its origine: Therefore as ſoon as it is agreed on to cut a vein and its place, let a large Veſſel be choſen, and very conſpicuous, that it may the more eaſily be opened; and being remote from an Arterie, Nerve, and Tendon, may be the more ſecurely lanced; wherefore in the Arm the median vein is commonly choſen, although the Cephalick being leſs environed with other Veſſels, is the more ſafely opened.

The jugular Vein is moſt ſafely opened.

The Jugular Vein is almoſt always opened as often as blood is let in Beaſts, it is a wonder it hath not obtained the ſame Cuſtom in Man, when the large and eminent Pipe hereof may moſt eaſily and ſafely here be cut, becauſe it neither hath an Arterie for its companion, and lies a great way from any Nerve. Moreover, from this veſſel as from any other whatſoever opened, an univerſal evacuation of blood is made from the whole body, and together the beſt derivation thereof from the head, ſo that all the ſtagnations or aggeſtions of the Blood and Serum are diſcharged thence.

Of Veins in the hand or feet.

Concerning Veſſels in the foot or the hand there is no great reaſon of choice, but take the vein which chiefly ſwells: it matters little concerning the Place, unleſs that if inciſion be made above, or near the Ankle, there is great care to be taken leſt a Tendon be hurt, which ſometimes by unskilful or raſh Chirurgeons happens to the damage of the Patient. Moreover, let care be taken leſt a vein be cut near its Anaſtomoſis with an Artery, for if this be committed, the blood being entirely Scarlet, will impetuouſly skip out, and the flux thereof is not eaſily ſtayed, nor the orifice of the veſſel ſoon ſtopt.

We ought to conſider by what means or by what inſtrument the Blood ought to be drawn forth.

The chief places being thus deſigned of letting forth the blood, and the choice of the veſſels being ſhewed, we ought next to treat of the Manner or Inſtruments by which blood is drawn out; which is uſed to be done either by a Lancet, in cutting the vein, or by ſuction by Leeches, or by Cupping-glaſſes after Scarification. But there is no need of diſcourſing theſe, becauſe each of theſe parts of Chirurgerie are every where in familiar uſe by Quacks, Barbers and Women, and all things relating to them ſo commonly known, as a man his own houſe; wherefore we will ſpeak but one word.

Some of the Ancients as well as Modern have ridiculouſly exclaimed againſt letting of Blood.

Helmont of late, and ſtill certain followers of him, Pſeudochymiſts and Fanaticks, have ejected Bleeding out of all Phyſick, becauſe they think this evacuation to be a great injury to Nature, (which being aided either by her own ſtrength, or by their Panacea's, they will have to overcome every offenſive thing of her ſelf;) Surely, this is no leſs ridiculous a thing than that long ſince *Chryſippus*, *Apemantes*, *Strato*, and ſome others, (as *Galen* reports) damn'd this remedy, becauſe a vein is difficultly known from an Artery. Truly it is manifeſt enough by ſad experience, that in cutting a vein ſometimes an Artery hath been pierced; whence either death or loſs of the member ſometimes enſues: the reaſon whereof is, not as is commonly alleadged, that the coats of an Artery being more nervous or membranous than the coats of a Vein, can ſcarcely or not at all be healed; when in truth that Veſſel is endowed with more and thicker fleſhy fibres; but the cauſe is, that an Artery like the Heart it ſelf, ought inceſſantly to ſhake and beat, the fibres thereof repeating perpetual turns of Syſtole and Diaſtole; wherefore, a little hole being made in its Pipe for the moſt part remains uncurable by reaſon of the continual motion of the Veſſel, and the efflux of blood. It is otherwiſe in a Vein whoſe opening is immediately ſtopt of its own accord; for but little of contractive work lies in its Coats, yea this only, that its fibres being lightly opened as occaſion ſerves, the blood flowing back of its own accord, is gently moved forwards; and after Phlebotomy, the veſſel being empty, they are permitted to be quiet, ſo that in the mean time the little hole made by inciſion is eaſily glewed together. Whenever Phyſitian or Patient do dread the opening of a vein to be adminiſtred, drawing of blood by Leeches or Cupping-glaſſes, will aptly enough and with like advantage ſupply the defect hereof. Moreover theſe adminiſtrations to remove the conjunct cauſe of a diſeaſe, where there is need rather of partial than general Evacuation or Derivation, are frequently preferr'd to Blood-letting it ſelf. There is no need to dwell longer on explicating the manner and reaſon of the effects of either of theſe operations, commonly enough known, but proceeding to other things, we will next throughly weigh the Time and Quantity of letting Blood.

Wherefore in opening a Vein the pricking of an Artery is ſo dangerous.

The

The opportunity of letting blood is often of ſo great moment, that whereas this Evacuation ſucceeds well at one time, at another it highly prejudices: But there are diverſe reſpects of time to be conſidered about the due performance of Blood-letting, but chiefly theſe four: The Time of the Diſeaſe, the Age, the Year, and Day: The firſt concerns chiefly the Cure of the Patient, the others the Preſervation of him. *Thirdly, The Time of letting Blood comming to conſideration.*

Firſt therefore if blood ought to be let in any Diſeaſe, it will be chiefly ſeaſonable about the beginning or encreaſe thereof, but not at all or very cautiouſly in the ſtate or declination. For at that time whilſt Nature is buſied, endeavouring a Criſis, ſo that the Spirits are in great labour, and the blood ferments very much, that great endeavour of it ought not to be diſturbed; and in the height of the diſeaſe, either Nature being Conquereſs doth not want ſuch a relief, or being ſubdued will not endure ſuch an Evacuation. *1. In reſpect of the diſeaſe.*

Secondly, If at any time for preſervation it be deliberated touching letting blood, Infants, Boys, and Old men, by the Cuſtom of all Nations obtain an exemption; alſo this evacuation was wont to be interdicted to pregnant Women, but now moſt commonly preſcribed. Men of a vigorous Conſtitution and middle Age, do well enough endure Phlebotomy, and often times want it. Notwithſtanding the firſt and ſecond time it ought not to be done without great occaſion, for that being once begun and afterwards repeated, it will ſoon proceed into an inevitable Cuſtom. *2. In reſpect of age.*

Thirdly, Hence they who uſed to let blood Spring and Autumn, afterwards cannot omit this evacuation without hazard. But to whom it will be either profitable or neceſſary to breath a Vein once or twice a year, the chief ſeaſonable times will be in the beginning of Spring and Autumn, *viz.* when the Blood being prone to ferment anew, is in danger to change its Craſis. Phlebotomy ſeaſonably adminiſtred, provides leſt the Sulphur and Salts being exalted, it ſhould contract a feaveriſh, ſcorbutical or other peccant diſtemper; likewiſe, leſt ſuffering a flux, it ſhould pour forth the ſerous Recrements, and other Feculencies upon the Brain, the Lungs or Bowels of the nether belly. About the Solſtices, when our bodies are very cold, or hot, the blood, as the juice of all Vegetables, conſiſting in a more fixt ſtate, and unapt to ſwell up, ought not to be let out, unleſs upon ſome urgent cauſe. *3. In reſpect of the Year and its parts.*

But whereas ſome preciſely, or rather ridiculouſly, obſerve about Phlebotomy, (even as the Countrey-men about Gelding Cattle,) the poſition of the Heavens, and the Aſpects of Moon and Stars, it appears altogether frivolous; and for that chiefly is this Cuſtom condemned, inaſmuch as counterfeit Aſtrologers have a Figure in their Almanacks wherein every ſign of the Zodiack, is allotted to every particular member of our bodies; and for that cauſe, under what ſign the Moon is converſant, they forbid blood to be drawn from the reſpective part of man. They who obſerve without reaſon the Heavens, do erre (as the ſaying is) the whole compaſs of the Heavens. Moreover, this vulgar error is not only abſurd, but frequently malevolent, inaſmuch as many of the common people will abſtain from Phlebotomy whatever indication makes for the ſame, if (as they ſay) the Sign be in the place of letting blood. *The Aſpect of the Moon and Stars are here of no moment.*

Fourthly, As to what relates to the time of the Day, in acute Diſeaſes, when a Phyſitian is ſent for, and there be indication for Phlebotomy immediately to be performed, after the body is prepared, he may preſcribe that operation any hour in day or night; but otherwiſe, if any interval may be allowed, then breathing a Vein rather is to be celebrated in a morning when the Stomach is faſting, the veſſels emptyed by ſweat in the night, the ſtream of blood being quieteſt, and appearing free from any Crous filth. Yea although neceſſity urge, it may be deferr'd a little untill the new Juice of things eaten be paſs'd into the blood; for the veſſels being emptyed will not only ſnatch the crude Chyle into themſelves, but frequently what is diſagreeable or unproportionate unto the blood, whence not only its motion is diſordered, but alſo the vital flame runs the hazard of being extinct. I have known ſome by Phlebotomy adminiſtred preſently after plentiful Drinking, or pouring in of vinous liquors, to have fallen into dreadfull ſwoundings away, which have laſted very long, untill the vital ſpirit being almoſt overwhelmed recovered it ſelf again. *4. The time of the day about letting of Blood.*

Moreover, in the fifth place, the opening the vein being indicated, and its time appointed, there remains ſtill no little conſideration to be had, what Quantity of blood is to be let out, in which point there is moſt commonly a fault committed, while ſome being too audacious, and others no leſs timerous, they affix thoſe bounds on this or that ſide of which for the moſt part conſiſts the Right. For that I may omit *5. The Quantity of the Blood to be taken away ought to be conſidered.*

Too much Phlebotomy to be avoided.

omit thoſe who ſcarcely or not at all admit of Phlebotomy (as I have before hinted) ſo I cannot eaſily aſſent to their practice who fear not to draw blood to ſwounings: Beſides, an error of no light moment is committed within the moderate bounds, while in ſome caſes blood is drawn by too ſparing a hand, and in others with too free. In a burning Feaver, Pleuriſie, Peripneumonia, Squinancy, Frenzie, Apoplexie, and other great diſeaſes, that have their origine from a turgeſcency or phlegmonic incurſion of the blood, a ſparing Phlebotomy doth always more prejudice than advantage. For beſides that it doth not remove the antecedent cauſe of the diſeaſe, to wit, the Plethora, it further cauſes the conjunct cauſe, *viz.* the inflammation and burſting out of the blood to be augmented. For truly it is a conſtant obſervation, that upon blood too ſparingly drawn, the whole maſs doth boyl up more notably, and doth acquire a new flux into the part affected; the reaſon of which is, that in a great Plethora many portions both of the Blood and Serum being thruſt forward into receſſes and ſtrait places, are there conſtrained to abide; which, after the Veſſels being a very little emptyed, do impetuouſly regurgitate into the maſs of blood, and do much diſturb it, and force it more impetuouſly to and fro. Wherefore alſo in this reſpect the veſſels ought to be very much emptyed, *viz.* that beſides freeing the former Juice from ſtraitneſs, alſo ſpace may be given to the Juice reduced from exile, which otherwiſe being not congruous, coming upon the blood, troubles it, and provokes it into efferveſcencies and eruptions. From hence we may obſerve, that almoſt all men grow more hot preſently after Phlebotomy, and yet the blood being ſufficiently evacuated, a little after they enjoy a more temperate condition.

But a more ſpare Bleeding often hurts, and fixts a feavour.

The Reaſon of which is declared.

But as a ſlender withdrawing of blood in ſome caſes is not only vain, but is performed with prejudice, ſo in other caſes too much effuſion is rarely committed ſcot-free, and ſometimes brings notable detriment of health. For when either ſtrength languiſhes, or the body labours under a notorious Cachexia, we muſt ſpare Blood-letting, and its taking away is either prohibited, or being indicated by ſome accident, is allowed but in a ſmall quantity. Wherefore in men endowed with a weak, tender and cold Conſtitution, and in conſumptive perſons, thoſe affected with a long or malignant Feaver, alſo in Hydropicks or Cacochymicks a vein is not raſhly to be breathed, at leaſt if it be, much blood is not ſuffered to be taken away. It will be an impoſſible thing to preſcribe general Rules, according to the particular caſes of every individual perſon, whereby the quantity of letting Blood may be exactly proportion'd according to the ſtrength of the Diſeaſe and the ability of the Patient; but let this be left to the judgment of the prudent Phyſitian preſent, and let his Commands be ever exactly obſerved; And let not (as it every where is) ſuch leave be given to Quacks, Empiricks and Barbers to play with humane life, who every where raſhly and wickedly uſe Phlebotomy; and if the blood ſpring more freely and appear diſcolour'd, therefore bragging of the veſſel being well pierc'd, they ſay it muſt be let out more plentifully, becauſe it appears bad, when oftentimes on the contrary it ought to be ſpared.

In ſome caſes the miſſion of Blood muſt be altogether avoided.

Phlebotomy ought ever to be done with a large orifice.

As ſoon as the Quantity of Blood to be taken away is determined, our next care ought to be, that a more large orifice being made, the blood equally mixt may flow out as ſoon as may be; for otherwiſe, if it go out from a ſmall hole, or drop by drop, or with a little ſtream, the maſs of blood fermenting will ſeparate into parts, and what is more ſubtile and ſpirituous will burſt out, the thicker and feculent remaining behind. Hence it is to be obſerved, that the blood being let out of a large orifice with a more full ſtream, if it be a little ſtopt with the finger clapt on it, and a little after ſuffered to flow out, the blood going out the ſecond time becomes much purer and brighter than the former, becauſe in the interval of flowing, the more ſubtile particles being unfolded from the thicker, and accumulated together, have prepared themſelves to fly away. Wherefore, if *Hippocrates*'s Precept ſhall be obſerved, *viz.* to let it run to the change of its Colour, it behoves us to procure that it ſpring out quickly, with a full and not interrupted ſtream. Beſides all this, as to what appertains to the alteration of the blood let out, and cold, and to the inſpection and the judgment thereof, for that we have often diſcourſed it in other places, we now paſs it by, haſtening to other things; and now the thread of Method leads us to entreat of Remedies oppoſite to Blood-letting, to wit *Iſchæmones*, that is, thoſe which are convenient to ſtop immoderate Hæmorrhagies, whether engenderd by Nature or by accident.

SECT.

SECT. III. CHAP. II.

Of Remedies reſtraining or ſtopping of Blood.

EVen as Art imitates Nature in letting forth the blood by Phlebotomy offending in plenty, or temperament, or in its motion, ſo it ſuccours her being diſeaſed or working wrong, by ſtopping the flux of blood whenſoever it is immoderate or hurtfull. Whereas there are various and many ſpecies of an Hemorrhage, there is no need of Phyſick for them all. If perhaps a great effuſion of blood happens by a ſolution of unity, excited by an outward accident, as a wound, or ſtroke, Chirurgery ſuggeſts the manner of Adminiſtrations whereby it ſhould be reſtrained. Moreover, an Hemorrhage as long as it ſhall be Critical, ought to be diſturbed by no Medicine, but left to the meer government of Nature (as long as ſhe does aright uſe her power;) and as to the Symptomatic, whileſt it is little or not much troubleſome, there is required no Phyſick: notwithſtanding there is great need of it, if at any time the Flux of blood be either immoderate, or flow out by unapt places. *Every Hemorrhage is not to be ſtopt.*

Eruptions of blood of this laſt kind chiefly challenge a Cure, if perhaps the blood be caſt upward by Coughing or Vomit, or downwards by ſeige, or thrown off through the Ureters. For in theſe caſes, though the quantity of the Blood excreted, be not much to be dreaded, notwithſtanding becauſe often a dangerous or mortal Ulcer enſues the ſolution of the Unity ſo made in the Lungs, or in the Stomach, Guts, or in a Vein; therefore we muſt induſtriouſly rancounter thoſe Hemorrhagies from their firſt appearance. Therefore among the Diſeaſes of thoſe parts, ſuch bloody excretions are accounted; but we have already in another place delivered the Theories of Spitting Blood, and of the affection Dyſenterical, and the reaſons of healing them, ſo that there is no need to repeat them here; neither alſo to propound here a remedy for bloody Urine, for that it belongs to the Nephritic Pathology; wherefore we will paſs to thoſe Paſſions, for which by reaſon of an immoderate efflux of blood, there is great need of reſtraining Medicines. *But only the immoderate and inconvenient.* *The chief Caſes of the latter are reckoned.*

The kinds of theſe Affections are chiefly three, *viz.* Hæmorrhage of the Noſtrils, of the Flowers, and the immoderate Flux of the Hemorrhoids: The Cure of which laſt doth belong more to Chirurgery than Phyſick, and I think it beſt to referre the other to the hyſterical Pathologie. Here properly belongs to this place the blood flowing out of the Noſtrils, being the moſt general kind of paſſions of that ſort, and common to every Age, Sex and Temperament, ſo that from the Diagnoſtick and Therapeutick of it duely aſſign'd, the uſes and efficacies of Medicines ſtopping blood will beſt appear: for what we proffer for the unfolding the Cauſes and Cure of this bloody eruption, may be accommodated unto all other dreadful Hemorrhagies. *And alſo of the former.* *For the preſent the Cure of the Hæmorrhage of the Noſtrils is only propounded.*

It is obſervable enough, that the Flux of blood from the Noſtrils doth happen to moſt men from extraordinary occaſions; for as oft as the blood, about to break out through its own turgeſcency, or through laxity of the veſſels, is apt in ſome place to make or find its way, it is, by a certain inſtinct of Nature, very often directed to the Noſtrils, as to the part moſt eaſily opened. The veſſels from whence it flows in that place, are ſlips of the arterial Branch going from the Carotides, after having paſs'd the Cranium, it comes to the baſis of the Cerebrum; for this proceeding near to the mammillary Proceſſes, ſends very many twigs from it ſelf every where about, of which ſome eminent ones paſſing the hole of the Sieve-like Bone with the ſmelling Nerves, are diſtributed through the glandulous membrane, inveſting the windings of the top of the Noſe. Theſe naſal Arteries departing firſt from the Trunk of the Carotides within the skull, anticipate part of the blood chiefly ſerous from the brain, and lay aſide the Serum it ſelf and other watery recrements into the glandules of the Noſtrils, as into the proper Emunctories of that Region, whence they diſtill into the cavity thereof. Wherefore, if the mouths of thoſe little Arteries do alwayes gape ſomewhat by reaſon of the ſweating out of the Serum, it is no marvel if the blood it ſelf being made more turgid, opening them a little more (which often are too looſe of themſelves) burſts forth of dores. Indeed this Emiſſary both of the Serum and of the Blood, being apt ordinarily to open, or on any occaſion, *A deſcription of the Veſſels from which Blood flowes.*

prevents

prevents or cures great incommodities of the brain, or of the Præcordia, yea and ſometimes of the whole body.

They are the ſame by which the Serum diſtills to the Noſtrils.

For in the firſt place, this way the Serum (as I ſaid) is derived from the head, and when the mouths of thoſe Veſſels are vellicated or provoked by any ſneezing Medicine put into the Noſtrils, the Serum is from thence more abundantly drawn out; which yet doth not deſcend from the Brain (as is commonly thought) but is anticipated by theſe naſal arteries, leſt it ſhould go to it; from which when it is more plentifully drained and brought forth by the uſe of Errhines, for that cauſe the Brain becomes more ſerene and exempt from vapours. Then ſecondly, leſt the Brain ſhould be overwhelmed at any time by blood more impetuouſly overflowing, a portion thereof paſſing through theſe veſſels and breaking out, eaſily prevents it.

The Blood flowing forth in too great plenty from theſe Veſſels, is very hurtfull.

But ſometimes it happens that an Hæmorrhage of this kind, rather becomes a Diſeaſe than a Remedy; for whenſoever the blood flows out more often and more abundantly than is fit from the Noſtril, if life be not immediately hazarded by reaſon of too great loſs, yet the remaining maſs of the blood being impoveriſhed thereby, and loſing its temper, acquires a cachectick and frequently an hydropick diſpoſition; even as we have clearly intimated before, where we alſo have ſhewn the Ætiologie of this diſtemper in common with other too great Hemorrhagies, either to conſiſt in the fault of the blood, or of the veſſels, or of both together.

The cauſes of ſuch an immoderate flux.

First, the blood bringing an Hemorrhage of it ſelf, offends either in Quantity or Quality; and therefore while occaſionally it boyls up, it cannot be contained within the veſſels, but either opening their mouths by diſtending them, or unlocking them by its acrimony, it skips out: To which happens that the blood being ſometimes diſſolved in its conſiſtence, and as it were infected, becomes unfit to continue the courſe of Circulation, inaſmuch as portions thereof ſeparating from one another, are partly fixed in the fleſh or skin, having ſuffer'd death; and partly breaking out, ſtirre up frequently dreadful, and ſometimes mortal Hæmorrhagies, as every where is diſcovered in malignant Feavers, and ſometimes in the Scurvy. Notwithſtanding the blood offending by meer Quantity or Acrimony, unleſs the fault of the Veſſels happening thereon provoke the flux thereof, or too eaſily permit it, ſeldom breaks out into a great Hemorrhage.

1. From the fault of the Blood.

2. From the fault of the Veſſels.

Therefore ſecondly, the veſſels bringing blood, as often as they conſpire to produce that affection, are uſually in the fault, either firſt inaſmuch as their ſmall mouths gaping, by reaſon of the fibres being too looſe and weak, do not readily enough tranſvaſate the blood out of the Arteries into the Veins; which fault happens to ſcorbutick and cachectical perſons; or ſecondly inaſmuch as by reaſon of the ſame moving fibres being affected with the Cramp and Convulſion, the blood being ſnatcht impetuouſly to and fro, and chiefly towards the Head, is conſtrained to break out to continue the thread of circulation, even as it will plainly appear in the caſe of a Patient which ſhall be ſhewn below.

Prognoſticks.

1. As to the Prognoſticks, although an immoderate flux of Blood, in the Small-Pox, Meaſles, malignant Feavers, and in the Plague, doth ever preſage evil, and is expedient to be ſtopt; notwithſtanding it ought to be reſtrained not by meer cooling or revulſory things, but to be chang'd by temperate Hydroticks into ſweating.

2. An Hæmorrhage of the Noſtrils, though not great, is more dangerous in Cachecticks with a weak Pulſe, and a cold ſweat, than a plentifull Hemorrhage in men endued with a Pulſe ſtrong enough, and blood very fervent.

3. They who are obnoxious to this Diſeaſe, by reaſon of a Dyſcraſie of blood and looſneſs of the veſſels, if there come upon both theſe a convulſive diſpoſition of the fibres of the little Arteries, they receive a far more difficult Cure, and frequently are reduced to extream languiſhings by reaſon of the great loſſes of blood.

4. From thoſe who are feaveriſh, when much blood ſhall flow out of the Noſtrils, and does not terminate the diſeaſe, often-times in the place of a Criſis a delirous or a ſoporiferous affection ſucceeds. There are many other prognoſticks about a Hemorrhage accurately remarkt by *Hippocrates*, which notwithſtanding properly belonging to the diſcourſe of a Feaver, we omit in this place; for truly, the Cure in general of this Diſtemper is here almoſt only intended.

Three primary Indications of Cure.

About which there will be three primary Indications, to wit, *Curatory*, *Vital*, and *Preſervatory*; the two former reſpect immediately the ſymptom to be ſtopt, as often as it ſhall be urgent; and the laſt is buſie about removing the Cauſe of the Diſeaſe, that

that ſo the aſſaults of the Hemorrhage may be ſmall, or not at all. Beſides, an Hemorrhage ought to be handled one way without a Feaver, and after a different manner if preſſed with a Feaver.

The Curatory Indication ſuggeſts three intentions of healing.

Therefore whenſoever without a feaver much blood ſhall flow out of the Noſe, preſently as there ſhall be need of ſtopping Remedies, there will be three chief intentions of Curing, all being together aſſumed into practice, *viz.* Let the turgeſcency of blood be bridled, that it may be leſs diſpoſed into inordinate tendencies. Moreover in like manner let it be endeavoured, that as well its fluxion being withdrawn from the Noſtrils may be diverted to another place, as that the mouths of the Veſſels gaping within the Noſtrils be ſhut: for which purpoſe Remedies as well external as internal very many and of diverſe kinds are wont to be exhibited; of the former we will entreat in order briefly.

Outward remedies to ſtop the flux of blood.

1. Ligatures.

Firſt therefore let the Patient be quiet, plac'd with his head upright, then let many of the Joints of his Arms and Thighs, but not all, be bound with ſtrait Ligatures, which ought now and then to be looſened and removed to other parts; for all being bound together and long, by reaſon of the blood being held in the outward parts, and too much detained from the heart, hath cauſed moſt dreadful ſwoundings; but otherwiſe this Remedy being prudently adminiſtred, frequently helps. For when the blood by this means running into the members by the Arteries, is ſtopt, that it preſently returns not by the veins, its more impetuous ſpreading it ſelf into the head is impeded. Moreover, by the painfull Ligatures of the Joints, the muſcular Fibres of the Carotides Arteries are preſerved from Cramps which oftentimes come upon them.

2. Bleeding.

Secondly, For diverting the tendency of blood from the Noſtrils, it is ſometimes expedient to breath a Vein in the Arm or in the Foot. For by how much more blood is carryed by the Arteries to the vein cut, by ſo much leſs will the afflux be towards the Noſtrils. Yet this adminiſtration does not always ſo help, but ſometimes a contrary effect thereof happens, as we have already obſerved in ſpitting blood. The reaſon whereof is, that the veſſels being ſuddenly and not ſufficiently emptyed, ſuck up again the diſagreeable humours formerly ejected, and ſtagnating within the pores, whereby the blood incontinently is ſtirred up into a greater eruptive turgeſcency.

3. Application of cold things.

Thirdly, Cold things applyed to the Forehead and Temples, alſo to the Nape of the Neck, where the vertebral Arteries aſcend, cauſe the veſſels to be bound together, and the flux of blood to be ſomewhat ſtopt or repelled. Notwithſtanding it is ill which ſome adviſe, that cooling Topicks be applyed to the Jugular Veins; for ſo the blood being retarded in its recourſe, flows the more plentifully out of the Noſtrils. Moreover, what is uſual, to apply linty Cloaths, or a Spunge moiſtened with Vinegar, to the Pubes and Teſticles, helps by no other means than the ligature of the members, to wit, inaſmuch as the flowing back of the venous Blood is impeded. A ſudden and unexpected ſprinkling of cold water on the face, frequently ſtops an Hæmorrhage, inaſmuch as it gives an impreſſion of terror.

4. Cupping-glaſſes.

Fourthly, Cupping-glaſſes applyed upon the Hypochondres, Flanches, inner part of the Thighs, and the ſoles of the feet, are accounted a famous remedy as well with the ancient, as with modern Phyſitians, for diverting a tendency of the blood from the Noſtrils. And the reaſon is plain, *viz.* becauſe a Cupping-glaſs being put on, the impulſe of air being prohibited by the ſpace of the orifice, and encreaſed every where about, preſently the blood and humours, yea and vapours, and ſolid parts, being call'd from any other tendency, are driven towards the empty ſpace of the Glaſs.

5. Frictions.

Fifthly, Rubbing of the extream parts are commended in this diſtemper by ſome Practitioners, which we judge not always uſeful, nay ſcarce ſafe; becauſe, although they ſolicit a greater appulſe of the blood to the feet or hands, yet they ſo haſten the return thereof, that the whole maſs of blood being raiſed into an effervescence, it hazards a more violent tendency towards the Noſtrils.

6. Cauteries.

Sixthly, *Zacutus Luſitanus* among his revulſory Remedies, propounds an actual Cautery to be applyed to the ſole of either foot; and *Crato* the bending the little finger of the ſame ſide, which becauſe done with no trouble we may try; but we adviſe not ſo of the former, unleſs the way of helping were more certain, which might compenſate the pain and lameneſs that would enſue thereon.

7. Faintings.

Seventhly, Swounding raiſed by any means, preſently ſtops an Hæmorrhage, how-

ever contumacious it be; wherefore when ſuch bleeding perſons are taken out of their beds, or when they do timorouſly admit of Phlebotomie, though but ſparingly, or have their members bound for a longer time, or are ſuddenly affrighted with ſome feigned rumour, or by ſome other occaſion fall into a ſwouning or fainting of the ſpirits, the flux of blood ceaſes thereon preſently. The reaſon whereof is evident enough, for that as ſoon as the motion of the heart fails, preſently the blood and ſpirits ruſh thither, and ſo every outward flux is ſtopt on a ſudden, and what was immoderate before, doth not again return.

Remedies by Sympathy and Antipathy.

1. Sympathetick powder.

2. Young Aſh-wood.

Eighthly, In the laſt place, for repreſſing the flux of blood from the Noſtrils, Remedies ought to be recited, which are ſaid to operate after an occult manner, by Sympathy or Antipathy, of which ſort firſt is the ſympathetick powder, made of Roman Vitriol calcin'd to a whiteneſs by the Summer Sun; alſo a piece of wood cut from a young Aſh firſt ſprouting about the time the Sun enters *Taurus*; the efficacy of which remedy in the late Civil Wars many worthy of credit atteſt to have been approved for ſtopping the Hemorrhages of wounded Souldiers: Yea ſome ſtill with much confidence preſcribe it in all eruptions of blood. I confeſs the reaſons of effects of this kind are concealed from me, if ſo be they happen often. Beſides, it ſeems not a leſs Empirical and irrational Remedy, that a ſilk Bag with a dry Toad in it, worn on the pit of the Stomach, ſtops any kind of Hemorrhage, and prevents its return: unleſs (according to the Ætiology of *Helmontius*) that the application terrifying the *Archæus*, compells the blood being aſtoniſh'd, either to go back, or deſiſt from its inordinate excurſion.

3. A dry Toad.

4. A Blood-ſtone.

5. Moſſe.

There remain very many famous Medicines whoſe Operations are wont to be referred to hidden Cauſes and ſecret vertue; as are Necklaces of Blood-ſtone hung about the Neck, alſo the moſs of a humane Skull carryed in the hand; Epithemes of the leaves of Nettles bruiſed and applyed to the ſoles of the feet, and the Palms of the hands; the Empirical adminiſtrations of which kind, when they may be adminiſtred without trouble or coſt, we make no refuſal of; ſince in a dangerous caſe every thing is to be attempted; and applications of that ſort do help ſometimes in reſpect that they fortifie the imagination of the patient.

Topicks cloſing the mouths of the Veſſels.

While ſuch like outward Adminiſtrations are uſed, for repreſſing or calling aſide the flux of blood out of the Noſtrils, alſo other Topicks are put up into the Noſtrils, which may ſhut the gaping mouths of the veſſels, for which uſe the injections of liquid things, Pledgets, Powders to be blown in, and Fumes are wont to be preſcribed, which not helping, in the laſt place we deſcend to Eſcharoticks.

6. Eſcharoticks.

The injection of Vitriol water.

Ninthly, Among Liquids, not only firſt, but as good as all others is eſteemed the ſolution of Vitriol in Fountain-water. Some boaſt this for a great ſecret, and a moſt certain Remedy. Indeed the ſame being applyed to a freſh wound, foraſmuch as it ſhuts the ends of the cut veſſels, by wrinkling them up, it reſtrains and preſently ſtops the flux of blood. But that application in Hemorrhages of the Noſtrils, where the blood being brought to the gaping mouths of the little Arteries, ought to be received by the Veins, in regard it ſhuts them as well or rather than thoſe, it ſucceeds little, and ſometimes not at all, as I have known it frequently experimented. This Medicine is prepared of Green Vitriol, *viz.* of *Hungary*, or of our Countrey, alſo of the fictitious Vitriol of *Mars* diſſolved in a ſufficient quantity of Spring-water. I know ſome commend the ſolution of Roman Vitriol, which they not only apply by injection, but alſo to a linnen cloath dipt in the blood are wont to adminiſter it ſympathetically. Moreover the water of the infuſion of white Vitriol prepared with Bole and Camphire, I have known to be uſed ſucceſſefully as well in wounds, as often in other Hemorrhagies.

10. Pledgets.

Tenthly, Since water caſt into the Noſtrils, doth not adhere enough to the mouths of the Veſſels, but is waſhed away by the breaking out of the blood, before it can exert its Virtue, it is therefore more expedient either that a Styptick powder be blown in, or that a Pledget dipt in the water of Vitriol, either by it ſelf, or ſtrewed with an aſtringent powder, be thruſt into the upper part of the Noſtril. For this purpoſe many and ſeveral kinds of ſtyptick powders have been preſcribed, I have frequently uſed either *Crocus Martis* calcin'd to the higheſt redneſs, or the powder of Camphorated Vitriol, or the vitriolic Soot ſcrap't from the bottom of an old Braſs Pot, the powder whereof I have often uſed with ſucceſs in this caſe. In obſtinate Hemorrhagies not yielding to other remedies, let Pledgets, whoſe tops are dipt in Cauſtick Colcothar, be put up deep into the Noſtrils, that the mouths of the Veſſels being

being burnt, and covered with an Eſchar, all flux of blood may be preſently ſtopt. Many other Errhines to ſtop bleeding are accounted famous with Practitioners, as Hogs-dung, thruſt into the Noſtrils, which by the meer ill ſavour is thought to repell the blood; alſo the ſmoak of Blood dropping on hot Iron, repercuſs'd into the Noſe, the Powder being burnt is alſo taken inwardly. The moſs of a humane Skull unburied, put into the Noſtrils, is commended by many for this effect: but theſe latter applications ought to be referred to the ſympathetick Ætiologie, if they avail any thing.

Hogs-dung.

Burnt Blood.

Theſe things concerning outward Remedies ſtopping blood, the vertue and efficacy of which ought at the ſame time to be promoted by intern Remedies, ſeaſonably exhibited and cooperating.

Therefore a ſlender Diet being inſtituted, and the Patient ordered to keep himſelf in an upright poſture, or not much ſupine, while the aforeſaid Adminiſtrations are orderly adminiſtred, medicines appropriated to the ſame end are alſo preſcribed to be taken inwardly. There will be two ſcopes of Remedies of this ſort, *viz.* 1. That the effervescency of Blood whether incentive or fermentative being ſuppreſſed, the liquor thereof being reſtrained within the veſſels, may pleaſingly circulate. 2. That the more impetuous motion of the heart driving about the blood too rapidly, may be depreſſed by apt Sufflamina's.

Inward Remedyes, whereof are two intentions.

1. The firſt Intention requires Medicines that ſuppreſs the too much kindling of the blood, and appeaſe the undue fermentation thereof, for which intents I uſually preſcribe the enſuing Remedies.

1. Things appeaſing the effervescency of the blood.

Take of the water of Plantane, red Poppy, Purſlain, and frog-Spawn, of each four ounces, Syrup of water-Lillies two ounces, Sal Prunella one dram, mix them for a Julep, the doſe three ounces three or four times a day.

Juleps.

Take Barly-water two pound, Red-roſe leaves one handfull, Spirit of Vitriol what ſuffices to make it gratefull, or about half a dram, make an Infuſion warm for extracting the Tincture, adde Syrup of St. John's*-wort two ounces: the doſe three or four ounces, as oft as they pleaſe day or night.*

Tinctures.

Take leaves of ſtinging Nettles, of Plantane, of each three handfuls, pour upon them being bruiſed Plantane-water 6 ounces, preſs them ſtrongly, let the ſtrained liquor be taken.

2. For the ſecond Intention, to wit, for the cooling of the heart too vehemently beating, Hypnoticks and Opiates are convenient.

2. Intention, to cool the motion of the Heart,

Take water of red Poppies three ounces, Syrup of Diacodium half an ounce, make a draught to take at night. Or,

Is done by Hypnoticks.

Take Conſerve of red Roſes an ounce and a half, Powder of Henbane, and white Poppy-ſeeds of each two drams, Syrup of Poppyes, enough to make an Opiate. The doſe the quantity of a Nutmeg every ſix or eight hours.

Take of Laudanum Cydoniatum one dram, the doſe fifteen drops twice a day in a convenient Vehicle.

Theſe things touching an immoderate Hemorrhage, and the Remedies thereof, when it happens without a Feaver: but that which coming in a feaver ought to be ſtopt in regard of the too great loſs of Blood, is either Critical making an immoderate excurſion, by reaſon of ſome accident, for which the Method and Medicines even now preſcribed with caution and reſpect had to the Feaver may be accommodated; or meerly Symptomatical, which being excited in a malignant and Spotted Feaver, Small-pox, Meaſles, or the Plague, neither ſcarcely can, nor ought to be ſtopt with the Remedies above recited. For letting of blood is not convenient, repelling Topicks, alſo cooling Juleps, or Decoctions, and Narcoticks, have no place here: The chief intention of Healing will be to change the Hemorrhage into Sweating, for a gentle Sweat being raiſed, the flux of Blood often ceaſes, if it be not very dangerous.

Of a Hemorrhage in a malignant Feaver.

Take water of Meadow ſweet, Tormentil, of each four ounces, Saxons cool Cordial two ounces, Treacle water an ounce and a half, Acetum Bozoardicum three drams, Syrup of Coral an ounce and a half, Confection of Hyacinths two drams, make a Julep, the doſe ſix ſpoonfuls, every third hour.

Remidies.

Take of the Powder of Toads prepared half a dram, Camphire two grains, take it every ſixth hour, with the forementioned Julep. Or,

Take Powder of Scarlet-cloth from half a dram to two Scruples, as before.

Take Confection of Hyacinths three drams, Powder of Scarlet-cloth one dram, Syrup of Corals enough to make a Confection; the doſe the quantity of a Nutmeg every other hour.

Take of Biſtort and Tormentil-roots, of each one ounce, the leaves of Meadowſweet, Pimpernel, Wood-ſorrel, of each one handful, burnt Harts-horn two drams, Shavings of Ivory and Hart-horn, of each two drams, boyl them in Spring-water from three pound to two, adding about the end Conſerve of red Roſes three ounces; the doſe three ounces being ſtrained, often in a day.

Second Indication vital.

2. Hitherto of the firſt Indication Curatory, together with the ſcopes of healing, and forms of Remedies, appointed for a Hæmorrhage of the Noſe happening with or without a feaver. The ſecond Indication Vital only preſcribes a ſlender Diet, temperate Cordials, and a fit handling of the Patient. The Proviſion of the firſt is ſo ſmall and eaſie, that there ſeems no need to appoint a Meaſure and Rules for it particularly. About the latter the chief queſtion is, whether we ought to retain them within or out of their beds. Without doubt the languiſhing, and thoſe obnoxious to often ſwounings, are not to be rouſed up, unleſs (as we have already hinted) it be for a Curatory attempt: as to others leſs weak, it ſeems ſo to be determined.

The Poſition of the Sick.

Sometimes in bed, and ſometimes out.

Thoſe whoſe Blood does not eaſily tranſpire by reaſon of the conſtipation of the pores, and is incited into a greater turgeſcence from the heat of the bed, and proner to break out, it will be expedient they not only remain out of bed while bleeding, but alſo ſometimes through extern applications to be cooled in the whole habit of their body, or at leaſt in moſt of their members. Wherefore, *Fabritius Hildanus* relates he ſuddenly cured one of a great Hemorrhage of the Noſtrils, after many things tryed in vain, by putting him into a veſſel of cold water. Alſo with like ſucceſs *Riverius* cured another affected in like manner, being taken out of his bed, and laid on a woollen Matte on the Pavement, he bathed his whole body with Linnen dipt in Oxycrate. Yet this method is not alike convenient for all perſons, or at all ſeaſons; but on the contrary, thoſe whoſe blood is halituous, and enjoying more open pores, doth evaporate eaſily, and being wont to be diſſolved by a more moderate heat encompaſſing them, into ſweat, and from thence find themſelves more quiet, it is more convenient that they remain within the bed, not only while the blood breaks out, but as long as there is danger of its return. For this reaſon it is, that many obnoxious to dreadful Hemorrhagies, during the Summer, when they tranſpire more freely, live exempt from that diſeaſe, but the Winter cold preſſing them, by reaſon of their pores being bound up, they ſuffer under more frequent and dreadful Invaſions.

Third Indication Preſervatory hath two intentions of healing.

3. The third Indication Preſervatory, which regarding the removing the Cauſe of that diſeaſe, either ſtops the eruptions of blood, or renders the ſame more rare, or leſs, and ſuggeſts theſe two Intentions of healing, *viz.* 1. That the blood being reſtored to its due temperament and mixture, may quietly circulate within the veſſels, without turgeſcency and breaking out. 2. That the Veſſels carrying Blood, as to the ſtructure of their little mouths, and the tenours of the muſcular fibres, may be contained in their due ſtate; ſo that they neither cauſe thoſe inordinate tendencies of blood towards the Head, nor ſuffer effluxes out of the noſe: For both theſe ends too great plenty and impurity of the Blood are carefully to be provided againſt by Phlebotomy and Purgation ſeaſonably uſed; afterwards for procuring and conſerving its good temperature, the following Alteratives may be given at fit ſeaſons of healing.

Forms of Remedies.

Take of Conſerve of red Roſes, of Hipps, an. three ounces, powder of all the Sanders an. half a dram, Coral prepared one dram, of the reddeſt Crocus Martis *two drams, Sal Prunella four Scruples, with Syrup of Coral, make an Electuary, take the quantity of a Cheſnut early in the morning and at night, by it ſelf, or drinking after it three ounces of the following water.*

Take the tops of Cypreſſe, Tamaris, an. eight handfuls, St. Johns-wort, Tamarisk, Horſetail an. four handfuls, of all the Sanders bruiſed an. one ounce, of the Crum of White-bread two pound, ſlice them ſmall, and pour on them of new milk eight pound, diſtill

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in a cold Still, ſweeten each doſe when taken with Syrup of the juice of Plantane.

Take leaves of Plantane, Brooklime, ſtinging Nettles, of each four handfuls, to them bruiſed pour half a pound of the foregoing water, of ſmall Cinnamon-water two ounces, preſs them ſtrong, the doſe three ounces to four, at Nine in the Morning, and at Five in the Afternoon.

Medicines of this ſort are taken in Spring and Autumn for twenty or thirty dayes, with ſometimes a gentle Purge coming between. In Summer let them drink Mineral Steel-waters for a Month, than which in this caſe there is not a better Remedy. Out of many Examples of perſons labouring with an Hemorrhage, we only propoſe this one ſingular caſe.

An Example of a rare Hemorrhage.

I was lately conſulted at a diſtance for a certain Gentleman that had ſuffered frequent and great eruptions of blood, one while at the Noſtrils, another while at the Hemorrhoid Veſſels. He had frequently uſed Phlebotomy by perſwaſion of his friends, without benefit; yea frequently falling into cold Sweats and Swounings after breathing a vein, and notwithſtanding obnoxious to eruptions of blood, he was wont to be much worſe. I preſcribed Juleps (having not yet ſeen him) and cooling Decoctions, and Anodynes, alſo the juicy expreſſions of herbs, and other things cooling the blood, but even from theſe, (as if all ſtill far enough from the ſcope) he was nothing the better. At length being ſent for into the Countrey to viſit him, I found the affection under which he ſuffered to be meerly or chiefly convulſive; for whereas he daily bled, his Pulſe was weak, the extreme parts cold, and all his Veſſels as being too much emptyed fell flat; alſo the patient was affected with a continual Vertigo and trembling of heart, and by and by with a ſwouning or fear of it. Really the blood was ſo far from breaking out by reaſon of turgeſcence, that rather the ſtream thereof being depreſſed and ſmall, it ſeemed ſcarce enough to ſuſtain the current of Circulation. Notwithſtanding the truth of the matter was, he was often ſenſible of ſomething in his body creeping one while upward, another while downward like wind, and for the moſt part the flux of blood out of his Noſtrils or Hemorrhoids, followed the tendency of that motion: hence it was eaſie to conclude, that the moving fibres of the Veſſels carrying blood, by which they are contracted, being affected with a Convulſion, did diſorderly convey the ſtream of blood however ſmall and low, to and fro, and ſo compell it into Eruptions: which alſo happen'd the eaſier, inaſmuch as the mouths of the veſſels being laxe and gaping, ſuffered the blood forc'd into them to flow out without any due reſiſtance. The inſtituted method of Curing did plainly approve of this Ætiology, inaſmuch as it happily ſucceeded, leaning on this ſuppoſition; for Blood-letting, and the uſe of Medicines ſtopping blood being at laſt omitted, I preſcribed the uſe of the enſuing Powder, a doſe whereof he took every ſixth hour with a fitting Julep.

Its Ætiologie.

His Cure.

Take the powder of male Pœonie, red Coral, Pearles, of each one dram, Ivory, Crabs-eyes, Blood-ſtone of each half a dram, Lapis Prunellæ one dram, make a Powder, the doſe half a dram.

Take of Black-cherrie water eight ounces, Balm, Barly Cinnamon-water, of each two ounces, Treasle-water one ounce, Syrup of Coral an ounce and a half.

But I commanded that Ligatures ſhould be applyed to certain places by a conſtant courſe, and by and by to other places as occaſion ſhould be given, as well to ſtop as to intercept the Convulſions of the Veſſels; and by remedies of this kind, and means of adminiſtration, he recovered his health in a ſhort ſpace, without any return of the diſeaſe.

SECT.

SECT. III. CHAP. III.

Of Vesicatories.

OF losing Blood by Phlebotomy, whensoever it is troublesome and injurious, and swells too much, and tumultuates within the vessels; also of retaining it by Medicines stopping Blood, as often as being outragious it rages too much of its own accord and flows out, we have hitherto largely discoursed. There remain other certain humours, *viz.* Nervous and Nutritious, as also Serous, and other recrementitious ones which are wont to flow within the Brain and Nerves, and as well in the nervous fibres, as the fleshy, yea and within the Pores of the skin and of the solid parts, which being often depraved or hindered in motion, require emission, being otherwise about to raise great troubles or pains, and frequently dangerous Diseases. Wherefore, that we may seasonably rencounter distempers that are about to rise or take their origin from thence, Physick hath found out certain other Emissaries, mediately or immediately deriving the forecited humours out of the parts and places where they shall offend. And those are either continual, *viz.* Fontinels of diverse kinds, which are as it were perpetual Drains, and pour out continually the Ichor; or they are temporary, when as occasion requires, the Scarf-skin being taken away in some part of the body, the extremities of the vessels in the skin are made naked, and withall so provok'd, that they spue out in great abundance the serous humours of a various descent and disposition, and so continue to evacuate the same for some time, one while longer, another while shorter. But such a manner of drawing out the serous humours from the outward superficies of the body or any part thereof, is wont to be procured by Medicines called by the Ancients *Phœnigms*, or *Sinapismus*, by Moderns *Vesicatories*; of which in the first place we will treat here, (because the knowledge of these leads the way to the Doctrine of Fontinels) and we will chiefly insist on unfolding these three things; *viz.* First, It shall be shewn, from what Bodyes, and after what manner disposed, Vesicatories are wont to be prepared. Secondly, Whereas they are of diverse kinds, it shall be declared what is the manner and reason of their operation in every one, or at least in the chief of them: Thirdly and lastly, we will make search for the curing of what sort of Distempers they ought to be appointed, and in what places applyed.

Vesicatories antiently called Phenigms and Sinapisms.

1. *Of what prepared.*

1. As to the first, the most simple Blisterers are either Fire, or solid Bodies, or Liquors endued with fiery particles; (which are seldome administred for this use by reason of the terror which they impress, and the imminent danger, lest being more strongly apply'd, they do not only blister the Scarf-skin, but burn the skin and other parts.) Let therefore what is safer and less dreadfull, Epithemes out of Concretes having more sharp and (as as is affirmed) potentially fiery particles, be applyed to the places to be blistered, which are either milder, and by the Ancients were call'd *Phœnigms*, because they made the part red, the Scarf-skin taken away; or were call'd *Sinapisms* in respect of the matter, and were wont to be prepared of Mustard, Pidgeons dung, Squills masht, Garlick, Milk of Figs, and the like; or they were stronger, and consisted of *Euphorbium*, *Cantharides*, *Flammula Jovis*, Crows foot, greater Plantane, with many others, which being endued with a certain burning and caustick quality, are used outwardly for the use above recited, but taken internally, they prove venemous and frequently mortal.

1. *From actual Fire, or things imbued with it.*

2. *From things potentially burning.*

The Composition and forms of things drawing blisters are reported to be manifold and of sundry kinds, although one or two may here suffice, and by how much ~~the more simple, the better~~; and in most cases for the most part 'tis all one which you use: notwithstanding we shall after our manner annex some select Prescriptions of these kinds of Remedies. And that we may say little of *Dropaces*, *Sinapisms*, and *Phœnigms*, whose use is almost exploded; almost all Vesicatories now in use have Cantharides for their Basis.

Forms of Vesicatories.

℞ *Take powder of Cantharides half a dram, to a dram, powder of Ameos seeds one scruple, of old Leaven kneaded with Vinegar, enough to make a Plaister, spread some of it on Leather,*

Leather, apply it twelve hours to the place to be bliſtered. This works certainly and ſtrong enough: but becauſe it is leſs compact and ſticking, and may fall from the place to which it is put, or is apt to crumble, therefore for the more commodious application, this following is very convenient, and now in uſe with moſt.

Take of Cantharides three drams, Euphorbium half a dram, powder of Ameos-ſeeds one dram, let be incorporated with Melilote-Plaiſter by a warm hand, as much of this powder as it is capable to receive, then ſpread it on Leather, and apply it for twelve or ſixteen hours.

A more delicate Veſicatory with a Dropace.

Some do uſe to incorporate the foregoing powder with *Burgundy* Pitch, and ſpread it upon Leather, afterwards to cover the ſides with red Sanders incorporated with *Burgundy* Pitch, and ſo adminiſter both a Dropace and a Veſicatory. Alſo by applying ſtill the ſame Plaiſter, the Scarf-skin being bliſter'd and taken off, and the place being red, and ulcerated, and only wiping it once or twice in a day, and putting it on again, they cauſe the little Ulcer raiſed by the Veſicatory, to flow at pleaſure, yea ſometimes above a month, and to throw off a plentiful Ichor.

Others incloſe Cantharides bruiſed, and ſprinkled with Vinegar in Silk, and apply to the place.

Some Empiricks uſe in the room of Cantharides a maſs of the leaves of Crow-foot, or *flamula Jovis* bruiſed on the place, by which the Scarf-skin being bliſtered, or rather eaten, the skin it ſelf, as if toucht with an actual fire, is much inflam'd and deeply ulcerated; whence not only a profuſion of Ichor but an inflammation of the whole member, and a feaveriſh diſpoſition ſometimes follow: wherefore theſe things are not to be uſed raſhly.

2. How they operate.

2. If it be enquired of the manner and reaſon how theſe and other Veſicatories operate: in the firſt place we ought to ſhew by what manner actual Fires, and things endued with particles proceeding from Fire, do raiſe a bliſter; then by an eaſie Analogy the force and manner of working of thoſe ſorts of remedies will be known, which are reputed to be endowed with a potential fire. Wherefore we obſerve of the former, that the fiery particles not being too vehemently applyed, penetrating the Scarf-skin without diſſolution of unity, enter under the skin it ſelf, where the extremities of the veſſels bringing blood, of the Nerves, and of the nervous Fibres are terminated; and there do variouſly twiſt together theſe, altering them from their poſition, and pervert the ſtructure of the whole texture of the skin: inſomuch that from all the veſſels being made angry in a high degree, the watery humour being imbued with igneous particles, and therefore rejected, as well by the blood as by the nervous Juice, is ſpued out in great abundance: This Lympha, becauſe it cannot paſs through the Scarf-skin, ſeparates it from the skin, and raiſes it into a bladdery bulk, from which at length being broke of its own accord, or occaſionally, it flows out. Moreover as long as the igneous particles adhere to the skin, and the mouths of the Veſſels, being covered with an Eſchar, are not cloſed up, theſe being continually twitched by them, do continue to ſpue out the Ichor. This kind of ichorous flux will the ſooner ceaſe, if immediately upon the hurt inflicted, the fiery particles be drawn out, by the application of ſome proper Antipyretick, as Fire it ſelf, Nitre, Soap, Onions, and the like. Moreover it runs the longer, if omitting an Antipyretick, medicines hindering the generation of a Cicatrice, or of the outer-skin, and unlocking the mouths of the veſſels, be worn upon the place affected.

Shewed by the example of Fire.

How Cantharides excite Bliſters and draw forth water.

By theſe it is eaſie to underſtand by what manner Veſicatories perform their operation, *viz.* Cantharides (as likewiſe any other of the ſame vertue) being outwardly applyed, and being heated by Effluvia's of the parts ſubjected, and ſo being provok'd to exert their power, do plentifully diſpatch ſharp and as it were fiery particles from themſelves, which penetrating the Scarf-skin without any tearing it, they are daſhed againſt the *Cutis* or other skin, where firſt they act upon the Spirits, and then by the affecting theſe, upon the Humours and ſolid parts. They very much provoke the Spirits, and drive them into painful Convulſions of the fibres, diſſolve the Humours, and conſtrain them to ſeparate into parts, ſo that the watery part being very much embued with thoſe ſharp, and as it were venemous particles, is rejected every where by the other Juice; and when in the mean time the ends of the Veſſels and Fibres are either eaten by the burning, or opened by twitching, and as it were drained, that Ichor conveying the hurtful particles is plentifully ſpued out of their little mouths; which then ſeparates the impervious *Cuticula* or the Scarf-skin, from the other

other skin or *Cutis* it ſelf, and raiſes it into a little bladder, and after this being broken and taken away, it is for ſome time poured out by the ulcerated skin (as we ſhewed it to come to paſs by reaſon of the particles of fire.)

But this is not only done, becauſe the ſerous Juice imbibing the ſharp parts of the Medicine, and conveying them out, doth not always bear them all back the ſame way by which they entred, but ſometimes this being endued with theſe ſtings, regurgitates into the maſs of Blood; and afterwards being circulated with it, and ejected with its infeſtous burden through other Emunctories, offends ſome weak or tenderer Channels in its paſſage or going forth; from whence very many contract a Strangury, from great or many Veſicatories, by reaſon of the urinary paſſages being affected for that cauſe with Acrimony or Eroſion, which in ſome becomes moſt ſharp and intolerable. Alſo that application ſometimes brings bloody Urines to others afflicted with the Stone; hence a ſuſpicion alſo ariſes, that thoſe who have tender Lungs, or who are ſubject to a Conſumption, are much endangered by this Medicine outwardly applyed; which notwithſtanding I have not known happen to any; but can rather atteſt by frequent experience on the other ſide, that it redounds to advantage rather than hurt. For the more ſharp particles of Cantharides, if they be long applyed, being ſometimes imbibed more plentifully by the blood, infect its whole Serum: which Juice ſo ſharpened, as long as it is confounded with the Balſamick blood, hurts no part; but being ſeparated from it by the Kidneys, it ſometimes brings hurt to them, and frequently not only twitches the neck of the Bladder by its Acrimony, but ſometimes corroding it, cauſes filth, and little skins, nay and blood to come away: but in the maſs of blood, the ſame more ſharp, ſaline-volatile particles do often moſt notably help; inaſmuch as they deſtroy the fixt or acid Salts in it, and unlock the conſiſtence of the blood too much bound up, and ſo do cauſe the ſerous and other morbific recrements before wrapt up with it, to be ſeparated from it, and to be more eaſily diſpatched by Urine and Sweat; hence Veſicatories being applyed long in Feavers do call forth plentifull Urine and a more eaſie Sweat. Alſo they open the obſtructed wayes, and move together the portions of Blood or Serum, ſtagnating or being extravaſated in any place, and reſtore them to their Circulation. Wherefore they are not uſed only to help in ſerous maladies, but alſo in thoſe of the blood, yea in a Pleuriſie, Peripneumonia, and in any other Feavers.

Why they bring a fervent Dyſuria.

Veſicatories move Sweat and Urine.

Having hitherto ſhewed after what manner Veſicatories operate firſt on the Spirits, and then on the Humours and ſolid parts, it is now our buſineſs in the next place to ſhew both the good and evil effects of them, as alſo the manners of uſing them. But that they in the firſt place operate on the Spirits is manifeſt from hence, that they exert no power on the deceaſed, and it is an ill Omen in thoſe that are languiſhing, when Veſicatories have no operation, becauſe it is an Indication that the Animal Spirits are much dejected, or abundantly diminiſhed.

The effects of Veſicatories.

Therefore, it behoves to conſider about the due unfolding the energy, force or virtue of this remedy, what humours it either immediately or mediately evacuates or alters; and afterwards in what Diſeaſes, and bodies how diſpoſed it either profits or hurts.

1. *As to humours of the Skin.*

Firſt, As to the former, the humours that are immediately ſent out by a Veſicatory, drop forth partly from the pores and glandules of the Skin, and partly out of the mouths of the little Arteries, and partly out of the extremities of the Nervous fibres; perhaps ſome little of the Juice newly received, out of the mouths of the veins, though not much, ſeems to be carryed back. The humours mediately drawn out by a Veſicatory are thoſe which the aforeſaid parts being emptyed receive elſewhere, and derive them forth.

1. The Skin is a thick Membrane conſiſting of a double Coat, very porous, alſo thick ſet about with moſt numerous glandules, with fat, as alſo the ends of the Veſſels and fibres being terminated therein, and thickly woven one within another. Wherefore, while a portion of it is made bare, the Scarf-skin being taken off with a Veſicatory, and the nervous fibres being twitched, do bind together, and wreath the glandules and pores, the ſerous humour contained in both, is moſt plentifully ſqueezed out. And whereas ſome pores are pervious into others, the Serum doth not only flow out of the place bliſter'd, but ſometimes into the little holes firſt ſo emptyed, a portion of the Serum coming from the neighbouring pores ſucceeds, and thence by and by ſweats out: wherefore in Patients affected with an Anaſarca, the little

ulcers

ulcers raiſed by a Veſicatory, exhauſt the waters every where in great plenty, and draw them out of the neighbourhood, yea and ſometimes at a great diſtance.

2. The little mouths of the Arteries being uncovered and twitched about the bliſtered place, do not only vomit out a portion of the Serum brought to them, by ordinary cuſtom, but the ſerous liquor being imbued with the Stimula of the medicine in the whole maſs of blood, immediately is ſeparated more plentifully from the blood; and at every turn of Circulation a greater plenty thereof is thrown out by the ſame mouths of the Arteries continually irritated: Moreover together with the Serum as it were ſo ſtagnating, and therefore removed from the whole blood into the little ulcers of the skin, other recrements and ſometimes the morbific matter it ſelf depart in plenty, and are diſpatched forth by the ſame Emiſſaries; and for this reaſon in malignant feavers, yea in ſome putrid, that are difficult to be judged of, when the recrements and corruptions of the blood, unapt to be thrown off, do threaten the Præcordia or Brain, Veſicatories continually and leiſurely draining it, do frequently yield notable relief; whereunto we may adde, that they do alſo alter and reſtore (as we before mentioned) the blood degenerate or depraved as to its Salts, and alſo by opening or ſubtilizing its conſiſtence, diſpoſe it towards an Eucraſie; wherefore, not only in a feaveriſh ſtate of Blood, but alſo in a ſtate otherwiſe peccant, or of ill Juice, this kind of remedy is often extreamly convenient.

2. In reſpect of the blood.

which they purge and alter.

3. Both reaſon and experience have enough proved, that Veſicatories evacuate a certain humour from the Nerves and nervous Fibres, and for that cauſe profit very much in convulſive diſtempers: For ſurely we have in another place clearly enough demonſtrated, that the watery liquor of the Brain and Nervous ſyſtem, doth ſometimes abound with heterogeneous Particles. Alſo it is manifeſt by frequent and familiar obſervation, that the impurities and recrements of that liquor, together with the watery Juice, do ſpontaneouſly ſweat out from the Nerves and nervous Fibres, when the fluor is raiſed, and either reſtagnating within the maſs of blood, are carryed off by Urine or by Sweats, or being depoſited within the Cavities of the bowels, are diſpatched by Vomit or Stool. Wherefore, when a Veſicatory is applyed, the extremities of the Nerves and nervous Fibres being made bare, and very much angred, immediately a humour abounding near their ends is voided; and alſo the whole Juice planted within their paſſages by a long ſucceſſion, is chafed, and delivered from ſtagnation; and the heterogeneous particles mixt with that nervous Juice, being every where agitated and derived from the Brain, ſlide towards their newly opened Emiſſary, by degrees, and at length are removed wholly forth.

3. In reſpect of the Nerves and of the humours abounding in them and in the nervous parts.

From theſe things we may collect, for the Cure of what Diſeaſes this kind of remedy doth chiefly conduce; for by reaſon of its evacuation out of the pores and glandules of the skin, as often as any ſerous, ſalt, ſharp, or otherwiſe hurtful humour is collected in thoſe parts, or their neighbourhood, and being excluded from the Circulation of blood, ſhall obſtinately ſtick in that place, ſurely there is no more ready or eaſie way afforded for drawing it forth, than by applying a Veſicatory, upon or below the place affected. Wherefore, it is not only indicated by an Anaſarca, or by any foulneſs or eruptions of the Skin, but moreover a Veſicatory is required for pains either arthritical or ſcorbutical, fixt any where in the extern habit of the body, or in any certain member.

For the curing of what Diſeaſes Veſicatories are convenient.

1. In all cutaneous Diſtempers.

Secondly, In reſpect of the Blood, Veſicatories are always uſed in malignant Feavers, as well to purge out leiſurely any heterogeneous or morbific matter, as to change it from a diſpoſition either too acid, or ſalt, or otherwiſe peccant, into a right temperament; yea they are of moſt excellent uſe in all putrid feavers of ill habit and hard to be judged of. Alſo for that cauſe in the Scurvy, Leucophlegmatia, *Pica Virginum* or Green Sickneſs, alſo in any other ill habit of body, this kind of remedy affords frequently notable help. Moreover not only for the ſake of correcting the blood it ſelf, but beſides as often as it being depraved ſpreads its corruption on other parts, and ſo doth firſt beget diſeaſes in the Head, the Cheſt, the nether Belly, or Members, and then excites their Fits, Veſicatories are uſually exhibited with ſucceſs. Wherefore it is a common remedy in Head-aches, a Vertigo, and ſoporiferous affections, no leſs than in a Catarrh or any defluxion either into the Eyes, Noſe, Palate, or Lungs, in which every one without conſulting a Phyſician, will preſcribe to themſelves Cantharides for Revulſion. I confeſs, when I have often been ſurprized with a great Cough, with abundant and thick Spittle (whereto I am originally obnoxious) I have received relief from no other Remedies more than from Veſicatories; wherefore I am wont, while

2. They take away the impurities and ill temperament of the blood.

This Remedy is profitable in thoſe Diſeaſes which the blood products in other parts.

that diſtemper doth urge, to apply Medicines drawing bliſters firſt upon the Vertebra's of the Neck, then thoſe little Ulcers being healed, beneath the Ears, and afterwards if need require it upon the Scapula's; for ſo the ſerous filth looſened from the conſiſtence of the blood ſweating forth, is derived from the Lungs, and alſo the mixture of the blood ſooner recovers its temper, inaſmuch as after this manner its enormous ſalts are deſtroyed.

3. Alſo in all Diſtempers of the Brain and of the nervous Stock.

Thirdly, In reſpect of the Humour, *Epiſpaſticks*, as they are of moſt common uſe, ſo they are wont to confer great help, in ſoporiferous, convulſive and painful diſtempers, for deriving and evacuating it out of the nervous ſtock and the brain it ſelf. Was ever any ſurprized with a Lethargy, Apoplexie, or Epilepſie, but that immediately Friends and Attendants however unexpert, have tormented his Hide with the application of Cantharides? In ſtupendious convulſive motions, aſcribed uſually to nothing leſs than Witchcraft, I have applyed Veſicatories with great benefit in many parts of the body at once, and I have continued them above a Month, preſently renewing them in freſh places. And alſo pains that are fixt and moſt fiercely tormenting in the membranous parts, are ſeldom cured without this adminiſtration. For ſometimes morbific humours and Particles which being deeply radicated, yield nothing at all to Purgers or ſweating Medicines or Diureticks, yet have ſeemed to have been pulled up by the roots by Veſicatories, as it were remedies laying violent hands on the diſeaſe.

For what Diſeaſes Veſicatories are intended.

But this Remedy although moſt general is not uſed to operate ſo eaſily and happily in ſome Diſeaſes and Conſtitutions; wherefore we may not raſhly or indifferently uſe it towards all perſons. For thoſe who are Nephritick and obnoxious to a frequent and painfull Strangury, ſcarce ever endure the application ſcot-free; wherefore, on thoſe that are ſo affected we muſt not uſe Veſicatories, unleſs in malignant Feavers, or acute Cephalick Diſeaſes, for avoiding the greater Evil.

In what Conſtitutions they agree beſt.

As to what relates to the various Temperaments and Conſtitutions of men in reſpect of which Veſicatories are uſed to be more or leſs convenient or advantageous: Concerning theſe, this threefold notable difference occurs. In the firſt place, ſome perſons for the moſt part endure well the uſe of this Medicine, and the little Ulcers raiſed thereby in the skin, ſweat out an Ichor ſufficiently plentifull without any Dyſurie, or great Inflammation of the place bliſtered; and then heal of their own accord; which effect ſucceeds only in blood of a good temperament, where, to wit, the Salt and Sulphur being moderately and rightly conſtituted, there is preſent an abundant plenty of Serum; whoſe Juice eaſily and more largely ſeparating from the reſt of the blood, carryes away the ſharper particles of the Medicine imbibed with it ſelf, and partly ſweats them out through the place bliſter'd, and partly conveys them out without prejudice by the Urinary paſſages; therefore alſo the advantagious effects now recited are produced in the maſs of blood.

Alſo in whom not.

2. But ſecondly this remedy with ſome doth neither well agree, nor operate profitably; becauſe it rubifies the place very much to which it is applyed, or rather excoriates it with moſt fierce pain and great inflammation; notwithſtanding the little ulcers made in the ſame place, although they do for ſome time torment the patient, yet pour out very ſmall or ſcarce any Ichor: Alſo to theſe always bliſter'd with torment, for the moſt part a violent Strangury happens. The uſe of theſe Veſicatories being troubleſome and unſucceſſefull, doth frequently happen to men of a cholerick and hotter temperament; whoſe blood is endowed with a plentiful Salt and Sulphur, and a ſmall quantity of Serum, being more throughly concocted with the reſt. Wherefore, when the Juice that ought to carry away the more ſharp particles of the Medicine, doth neither eaſily nor plentifully paſs from the reſt of the blood, (that it may ſpeedily waſh them out) thoſe particles ſticking ſtill in the skin, do as it were infect and impoyſon the blood it ſelf, paſſing through, and for that cauſe being impeded from its circuit, they cauſe it to ſtagnate, and to be gathered together about the extremities of the Veſſels, whence they are inflamed. Moreover the ſerous Juice being ſeparated by the Kidneys when of it ſelf it is little and ſharp, and beſides becomes ſtinging from the particles of the Medicine, it irritates the Neck of the Bladder, and frequently corrodes it by its acrimony.

In men of a more hot temperament they torment the part and do not draw forth the water.

In others, inaſmuch as they draw forth too much Ichor, they are not profitable.

3. There remains a third Caſe although more rare, relating to bliſtering, to wit, in whom little Ulcers being raiſed in the skin, preſently pour out the ſerous humour in ſo great abundance, that in a little time it will be neceſſary to give repelling Medicines, and that ſhut the mouths of the Veſſels; otherwiſe, from too much flowing out of waters,

waters, a diſſolution of ſtrength, and a fainting of the Spirits are in danger to enſue. This I have known ſo conſtantly happen to ſome Patients, that afterwards I was fain to reſtrain their uſe of Cantharides although there was need of them; the reaſon whereof ſeems to be, that the blood being endowed with a ſalt Serum, and more ſharp than it ought to be, hath a conſiſtence too eaſily diſſolved: wherefore, that ſerous juice being ſharp, and fretting of it ſelf, as ſoon as it is provok'd by the particles of the Medicine looſening the conſiſtence of the Blood too eaſily diſſolved, immediately breaking out with violence from the maſs of blood, whereſoever there is a paſſage afforded, it flows out with a full torrent through the mouths of the veſſels gaping in the bliſtered place. Beſides this too much flowing out of the Serum, raiſed from the firſt application of the Veſicatory, ſometimes happening late in malignant Feavers, and in others ill, or not at all judged, and remaining a good while, wholly conſumes the morbific matter, and delivers the Patient from the jaws of Death. In ſuch a Caſe after the little Ulcers for the firſt days have poured out little or a very ſmall quantity of Ichor, at length Nature attempting a Criſis by this way, a vaſt Illuvies of Serum flows out from the ſame; and ſo ſometimes for many dayes, nay weeks, continues to flow out, untill the Patient before accounted deſperate, recovers his entire Health. Little Ulcers ſo abundantly flowing, as it is not eaſie, ſo it is not ſafe to ſtop them before the whole Mine of the Diſeaſe be conſumed. Not long ſince, a famous Doctor of Phyſick in *London*, ſcarcely recovering from a malignant Feaver, did copiouſly ſweat out Ichor daily from places bliſtered in ſeveral parts of his body; after ſome time (they being troubleſome and tedious) he did apply ſtronger Repercuſſives to them all, and immediately reſtrained their flux. Thoſe ſluces were ſcarce two days ſtopt, but his diſeaſe revived, and on the ſudden he was affected with fainting of Spirits, and often ſwooning, a cold Sweat, and a low weak Pulſe: and whereas he could not be relieved by any Remedies, however cordial they were, he dyed within three days; the cauſe of which ſeems to be, that the malignant matter being ſuddenly repercuſſed, fell into the Cardiac Nerves, whoſe action being hindred, the vital function quickly failed.

The Ulcers of Veſicatories do ſometimes plentifully flow in Feavers, and give Judgment of the Diſeaſe.

They are not to be cured.

An Example is ſhewn.

SECT. III. CHAP. IV.

Of Fontinels, or Iſſues.

BEſides Veſicatories, which being as it were the extemporary Emiſſaries of the Serum, and other humours externally to be brought forth, are only raiſed upon ſome occaſions, and then after their efficacy a little ſhewed, are permitted to be dryed up; there are others eſteemed as it were continual Fountains, therefore named *Fonticuli* or Iſſues, out of which the Ichor or ſerous humour flows with a conſtant Spring. Thoſe former, as they are requiſite for the moſt part for Cure-ſake in acute or other Diſeaſes, whoſe morbifick matter requires a quick diſpatch, in the firſt place reſpect the conjunct cauſe of the Diſeaſe to be removed; and therefore being more broad, are made only ſuperficial, that ſuch little Ulcers being large, may evacuate much, and then eaſily be healed: but on the other ſide, Iſſues being chiefly indicated for preſervation, are ordained to remove or vanquiſh the procatarctick cauſe of the Diſeaſe: wherefore they conſiſt of a more narrow orifice, but made more deep through the thickneſs of the whole skin, to the end, that while they ſend out the morbifick matter in leſſer quantity, they may derive it further, and continue longer to purge it out.

Iſſues rather a preſervatory than curatory Remedy.

There are three chief heads of diſquiſitions concerning Iſſues, *viz.* Firſt, what humours theſe Emiſſaries chiefly evacuate, and whence they bring them: Secondly, in what Diſeaſes or Conſtitutions they better or worſe agree: Afterwards Thirdly in what places, in what form, and with what inſtruments they ought to be made.

About theſe, three things are to be enquired into.

1. As to the former, Iſſues, like Bliſters, purge out all humours fixt within the skin, (although in a leſs compaſs,) or brought through it as well by the ſanguiferous, as nervous Veſſels, not only as they provoke, or as it were ſuck the outer ſuperficies of the skin, but by piercing through the whole hide or skin, they convey

1. *What humours they evacuate.*

out whatſoever flows from the ſides of the orifice through the broken Veſſels, alſo whatſoever ſlides down elſewhere beneath the orifice. Wherefore not only humours accumulated within the pores of the skin, or glandules, or brought thither by the Arteries, or Nerves, have conflux to Iſſues; but moreover the ſerous recrements under the skin, that are wont to be tranferr'd, or creep between the interſpaces of the muſcles and membranes from place to place, tend every where unto them and find paſſage. Moreover an Iſſue appointed in the way anticipates morbifick humours, which were formerly wont to be conveyed to other weak and long afflicted parts, and by ſuch means exempts one while this part, another while that, from their invaſion. Hence either a Gouty, or Nephritick, or Colick matter, and ſometimes a Paralytical, or otherways ſcorbutical, are frequently intercepted by Fontinels, in their paſſage from their Source to their neſts or places of reſidence, and ſo are conveyed forth, and the uſual aſſaults of a diſeaſe declined: Neither doth this Emiſſary leſs purge from thence by degrees the humours impacted in any part or region of the body, and there cauſing prejudice, than water-furrows made for derivation of moiſture, and ſo prevent or cure a ſickly diſpoſition.

2. In what diſeaſes they chiefly prevail.

2. From theſe ſeveral accounts of aſſiſtance, whereby Iſſues in general are wont to help, it is eaſily collected, for what diſtempers they are chiefly required; for although there is ſcarce any diſeaſe happens, wherein this remedy is either hurtfull or unprofitable, notwithſtanding it ſeems rather more neceſſary in ſome caſes than in others. It is commonly preſcribed for almoſt every diſeaſe of the head, whether outward or inward: Every one of the ordinary people procures an Iſſue as equal to all other Remedies, for the Convulſions of Infants, or Youths, for Sore-Eyes, Kings-Evil, as alſo for Head-ache in perſons adult or ancient, for drouſie, vertiginous or Cramp-like diſtempers. Neither is it leſs celebrated againſt diſeaſes of the Breaſt; As who is obnoxious to a Cough, bloody or conſumptive Spitting, or an Aſthma that long enjoys his skin whole? In like manner Iſſues are commended in affects of the lower Belly; ſcarce any Hypochondriacal perſon or Hyſterical woman, in like manner no Gouty or Cachectical perſon, but hath his skin pierc'd in many places like a Lamprey. It would be a vaſt work to recount here particularly all the Diſtempers for which Fontinels are helpfull.

3. In what Bodyes they agree not.

3. But really this remedy, however advantagious and benign of it ſelf, doth not agree with all perſons, nor is it indifferently to be preſcribed to every one. For there are two ſorts of men, which though ſick, are to be excuſed from Iſſues, inaſmuch as this Emiſſary evacuates too much in ſome, and too little in others, or leſs than is convenient; and in the mean while remains very painful and intolerable.

Viz. *Firſt where they evacuate too much.*

Sometimes a Fontinel is not convenient, becauſe it too much evacuates or conſumes the humour or Spirits. For I have obſerved in ſome, that an Iſſue made in any part of the body, pours out an immoderate quantity of Ichor, and peccant in quality: for out of it by often turns, if not continually, a watery, thin and fetid Juice, oftentimes diſcolouring the Pea and Coverings with blackneſs, flows out in great abundance, and ſo the ſtrength and fleſh is impaired by too great an Efflux thereof.

Why they often pour out the humour too much.

The reaſon whereof ſeems to be this, that in ſome perſons endued with an ill diſpoſition of blood and humours, a wound being made and hindred from healing up, degenerates ſtraightways into a filthy and malignant Ulcer; the ſides whereof put on the nature of an acid corruptive ferment, whereby the portions of blood continually forced thither, are ſo tainted and diſſolved, that the Serum thereof imbued with the diſſolved Sulphur, and other Corruptions, being refuſed by the Veins, flows out there copiouſly. Moreover, this putrifying pollution of an Iſſue being communicated to the blood, depraves in ſome part the whole maſs thereof, and ſo at leaſt (as alſo by too much loſs of the ſerous Juice) it is rendered leſs nutritious: Beſides, from the Sulphur of the blood diſſolved near the ſides of the Iſſue and flowing out with the Serum, the ſtreaming Ichor doth ſo ſtink, and black the Covering. Sometimes an Iſſue pouring out the ichor not immoderately, conſumes the ſpirits and ſtrength more than it ought, which really we take cogniſance of from the effect, and ſometimes not till afterwards; inaſmuch as ſome, while they bear about them one or more Iſſues, remain feeble and lean; but they being ſtopt preſently become vigorous and more plump. Moreover, it is a common obſervation, that many from an Iſſue raiſed near the head, have been preſently ſurprized with a certain defect, and weakneſs of ſight, inſomuch that they have been conſtrained immediately to heal it up: which ſeems to happen

Why they expend the Spirits too much.

happen for this cauſe, for that where the proviſion of ſpirits is ſmall, and their conſiſtence very thin, the ſmall loſſes of them, or of the Juice from whence they are procreated, if ſo be they are conſtant, are difficultly endured.

Iſſues are likewiſe inconvenient when they evacuate leſs than they ſhould do.

But in another and different reſpect, Iſſues like Veſicatories are forbid to ſome, or very cautiouſly preſcribed, for when they evacuate little or nothing at all, they very much vex the place, where they are made. For in perſons endued with a cholerick, or hotter conſtitution, the maſſe of blood being thicker than it ought to be, and leſs diluted with Serum, becomes more bound in its conſiſtence; in theſe the ſolution of Continuity being made and kept by reaſon of the Iſſue, the blood it ſelf (for that it doth not ſufficiently diſcharge its Serum, whereby it may go away) ſticks in the paſſage, and ſo being extravaſated, cauſes a very painfull inflammation; and in the mean while, as it pours out little ichor, it remains as well unuſefull as troubleſome. The operation and uſes of Fontinels and their indications being deſigned, we ſhall ſhew in what place, in what form, and with what inſtruments they ought to be made, and after what ſort to be managed.

The places of Iſſues are deſigned, according as the ends are Evacuation General, or Secondly, Evacuation and Revulſion, or both that and derivation.

The places are appointed according to the ends or intentions of Curing by them, which chiefly are theſe three, *viz.* 1. A general Evacuation of humours from the whole body. 2. An Evacuation and alſo a revulſion from ſome particular member. 3. An Evacuation and alſo a derivation from ſome particular member. In reſpect of the firſt it is expedient that an Iſſue be made in the left arm; The ſecond Intention requires it far from the part affected, and the Third near the part.

For theſe ends, *viz.* one while for this, another while that or the other Fontinels are made in all parts of the Body, *viz.* in the Head, Breaſt, Abdomen, in the Arms and Thighs, and in moſt parts of each of theſe, either by Inciſion, or Cautery, or piercing through, and in their holes or orifices Peaſe, or wooden Peaſe, Pellets or Pledgets, are put to keep them open. We will obſerve the principal places and kinds of Iſſues by running through the members of our body.

1. In the Coronal Suture.

1. A Fontinel is preſcribed by ſome to be burnt by a Cautery in the Coronal Suture, and is commended for exhauſting and evacuating humours out of the brain and its outer Coverings. Although ſome uſe this in familiar practice, yet I have found by experience in ſome it doth leſs happily ſucceed, inſomuch that I have ordered many Iſſues to be ſtopt that have been made on the top of the head, being inſtructed herein from Reaſon and Experience; for that the blood transferres more feculency towards the place where it was wont to lay aſide its recrements, and depoſites them in the whole vicinage, and chiefly in the part affected, (as being the weaker and more ſuſceptible part) whence a Diſeaſe is oftner augmented than cured. For the ſame reaſon, *viz.* for the derivation of the humours from the inner head outwards, ſome form Iſſues in the fore-part of the Head over the ſagittal Suture, others in the hinder part of the Head about the beginning of the Lamboides, but the ſame exception remains againſt both as the former. And doubtleſs more rightly doth an Iſſue in the Arm anticipate the morbifick matter that is wont to be depoſited about the head, or makes revulſion in the Thigh, and raiſed a little beneath the head, derives from thence. For this reaſon in painfull diſtempers of the brain, and Meninges, we cut a deep hole in the Nape of the Neck in Children and Youths; but for thoſe grown up, and Old men, we apply Cauteries on either ſide the Spine between the Shoulders or the Homoplatas, and in the ſame places we make inciſion for two Fontinels capable of many Peaſe, often with very great ſucceſs. As to holes cut or burnt behind the Ears, or a Seton with a skane of Silk drawn through the Lobes thereof, I have ſeen them rarely with any ſucceſs, but often very troubleſome; Inaſmuch as a ſolution of Unity made in theſe places, neither diſcharges much Ichor, nor for any long ſpace; for though the hole or orifice be fill'd with a Peaſe, or Pill, it will be covered in ſpite of all endeavours to the contrary by the Cuticula, or skin growing under.

Iſſues in the fore and hinder part of the head.

Between the Shoulders.

which are profitable in many diſeaſes.

Iſſues in the back do notably help diſeaſes not only of the Head by Evacuation, and derivation of the morbifie matter, but alſo in all Gouts, Stone and Colicks, by anticipating the fuel of the Diſeaſe, and by intercepting it while it tends to its ſeats: which really is plainly proved by experiments and obſervations taken from the help of the Patients.

Fontinels between the Shoulders, alſo in the Arm or Thigh, conduce to the evacuating or anticipating, in pectoral Diſeaſes, the humours flowing to the Lungs, and to the drawing back thoſe depoſited there. How an Iſſue cut in the Cheſt between the Ribs doth ſometimes more immediately derive the conſumptive matter from the Lungs, we have elſewhere ſhewed.

The

An Iſſue in the left Hypochondrion.

The Region of the Abdomen ſeems unapt for bearing an Iſſue in any part thereof; notwithſtanding the practice of ſome, although it be more rare, is much fam'd for a large Iſſue capable of many Peaſe to be burnt with a Cautery upon the Region of the Spleen for any hypochondriac affection. I have known it of ſmall benefit to ſome, at leaſt not recompenſing the trouble and pain of ſuch a remedy.

In the Groin.

Some time ſince I ſucceſſefully cured a weakneſs in the Loyns obſtinate to all other remedies, by a Fontinel in the Groin, and in another patient an inveterate Sciatica. For ſurely the glandulous Emunctories ſettled in that place, do imbibe very many recrements of the blood and nervous Juice; which if they be throughly and continually diſcharg'd from them by a fit vent, it will much conduce to exempt the contiguous parts from any morbifick Mine.

In the Thigh.

The Thigh being a member ſoft and large in bulk, ſeems apt enough for enduring many and great Iſſues, to wit, thoſe which may purge away plentiful humours from the whole body. Yet it doth not ſucceed ſo with many patients, partly becauſe of its figure too much declining, like a Cone invers'd, the Ligature containing the Peaſe in the orifice is not eaſily kept on, and partly becauſe a ſolution of the Unity being made among the concourſe of ſo many Tendons, it frequently becomes inflamed and painfull; inſomuch that ſometimes it hath been neceſſary that it ſhould immediately be ſtopt up, to withdraw the trouble of pain and of lameneſs. Notwithſtanding it ſucceeds better in ſome Patients, for that an inflammation doth not always enſue upon the place where the inciſion was made, and that the Ligature has remained immovable to thoſe that tye their hoſe above the knee.

A fit place in the member to be choſen that it may be made far from Veſſels and Tendons.

Moreover, as concerning Iſſues, it is requiſite to chooſe a convenient place not only in the body, but alſo in the very member where inciſion is made, which chiefly calls for the judgement of an expert Phyſician or Chirurgeon; for carefull proviſion muſt be made, leſt a Cautery or inciſion be made upon, or too near the Tendons or greater Veſſels; but let the Fontinel be made not in the very body of the muſcle, but in the interſpace or diſtance between the muſcles; where the orifice, as *John Heurnius* learnedly obſerves, ought to paſs through the whole skin ſo far, untill the little membrane of the muſcle underneath be penetrated. Wherefore, this part of Chirurgery is not raſhly to be allowed to Quacks and others ignorant of Anatomy, for that from this being ill done, not only a fruſtration of the benefit, but from thence frequently great miſchief happens, and ſometimes to the hazard of life.

Symptoms accidental to Iſſues how to be cured.

It is not needfull to deſcribe the figure and uſe of the cutting Inſtrument, together with the manner of preparing and compounding Cauſticks for making Iſſues, inaſmuch as it is notorious to the common people; yet it behoves us to handle in what manner the ſymptomes which happen to theſe Emiſſaries after they are made, may be cured, and it will not be beſides the matter to diſcourſe, what do either impede or pervert their powers.

What chiefly require help.

Whereas many and ſeveral diſtempers happen to Iſſues, help is not required for them all, but only for ſuch as are of greateſt moment: Wherefore there will be need of help, 1. Whereſoever an inflammation enſues upon the part or place where it is. 2. If the Orifice vent more or leſs Ichor than it ought. 3. If the Ulcer ſhall be apt ſpontaneouſly to be dryed up, and cover'd over with a skin: or if it be prone to abound with ſpongious fleſh growing about the ſides. As to leſſer faults, as when the Ulcer ſhall break forth into frequent Hæmorrhagies, or change its place creeping into another leſs convenient, with many other ways by which it prevaricates, it will not be worth our labour to diſcourſe here.

1. Inflammation.

1. An inflammation frequently happens to an iſſue, and that ſo painfull ſometimes, that it threatens a Sphacela, yea and ſometimes cauſes one. But ſuch an affection enſues either upon the orifice new made, or happens afterwards by reaſon of the blood and humours, occaſionally agitated and ruſhing frequently and in heaps to that part.

Which happens to a new Iſſue, the Reaſon of it and Cure propoſed.

When a Fontinel is made, immediately by reaſon of ſolution of the Unity, and conſequently by reaſon of the circuit of blood ſomewhat hindred in that place, a certain inflammation and ulcerous pain happens to ſome patients; but in ſome endued with a fervent blood, and whoſe Serum is leſs diluted, this enſues much fiercer. For the blood being brought thither by the Arteries, the ends of the Veſſels being cut off and obſtructed, it can neither go out nor be returned immediately by the Veins, but ſticking there in the paſſage it is accumulated more and more, and being at length extravaſated, and filling and ſtopping all the pores of the contiguous skin and fleſh,

fleſh, it raiſes a tumour with redneſs, and heat moſt intenſe, which coming to paſs, either the blood ſo heaped up, and extravaſated, in a ſhort ſpace of time becomes immovable by reaſon of conſtipation, and for that cauſe being as it were divided from the reſt of the maſs, it is extinguiſhed, and ſuffering death produces a Sphacela upon the part: Or ſecondly, the blood ſo ſtagnating, is after a ſort agitated as to its particles, and enjoying alwayes a vital flame, and made more intenſe by the ſame, it is as it were boyled throughly, and ſo is changed into a Pus, to be evacuated by an abſceſſe: Or, thirdly, which happens more frequently, and ought always to be procured in our caſe, the blood provoking an inflammation is reduced into the Veſſels and reſtored to Circulation by other paſſages whereinto it is conſtrained.

An Inflammation hath three manner of Criſis's.

But that it may be reduced, theſe two things will be neceſſarily requiſite: Firſt, That it be much diluted with the Serum flowing thither abundantly, or rather thruſt forward into the part: Then ſecondly, that the Veſſels behind the Tumour being emptyed, may ſwallow up the blood diluted, and driven back by the Serum; for the blood being forced towards the Tumour, whenas it cannot advance forward, yet its bulk being diminiſhed, that it may be able to return back, it diſchages the Serum plentifully from it ſelf, and drives it forwards into the places obſtructed; which entring under the ſtagnating blood, dilutes it, and ſucceeding into its places, forces it back into the paſſages of the Veſſels, and in the mean while that Serum tending forward exhales by the pores; inſomuch that the blood which was extravaſated being diluted and forced back by the Serum, and the Serum it ſelf evaporated, the ſwelling with the Inflammation vaniſhes leiſurely away. But if (as in more hot temperaments it comes often to paſs) the blood being extravaſated and impacted in the pores, be not diluted by the Serum brought to it in great plenty, it will not only ſtick there pertinaciouſly, but it will irritate a fiercer Phlogoſie with a Feaver, and ſometimes other dreadful ſymptomes. So, not long agoe, when a renowned Divine, endowed with a thicker and hot blood, had an Iſſue cut in the inſide of his Leg, although the skin only was cut, an inflammation followed preſently, which within a few days ſo cruelly encreaſed, that it could hardly be impeded by any Remedies from degenerating into a Gangrene. Wherefore, when the blood being extravaſated through the ſolution of the Union, and wanting the afflux of the Serum whereby it may be diluted and brought back, proceeds into an Inflammation, Fomentations and Cataplaſms of Emollients being outwardly adminiſtred, do often-times bring help; inaſmuch as the moiſt and ſoft particles falling from theſe, go under the blood ſtagnating, and dilute it, and ſo pleaſingly moving it together, cauſe it to return the more eaſily into the Veſſels; hence it is, that the moiſt applications of this kind being adminiſtred outwardly, do ſupply the defect of the intern Serum requiſite to dilute the blood; notwithſtanding that the blood being ſo diluted and irritated into motion, might be rendered fit for its Circulation, there is alſo need that the Veſſels which ſhould receive it ſhould be enough emptyed, for which purpoſe Phlebotomy and Purgation are frequently of neceſſary uſe, beſides a ſlender Diet. And indeed according to uſual cuſtom, we purge Cacochymicks or Plethoricks a little before, or after the Iſſue is made, and frequently breathe a vein in thoſe Patients. Neither are theſe Remedies only fit in an Iſſue new made, to provide againſt or diſcharge an Inflammation, but alſo they are advantageous as often as that diſtemper enſues upon an old Orifice of the skin. For as often as the blood being very impure, and together growing feaveriſhly hot, doth enter into a ſeparating turgeſcence, it frequently happens that it diſcharges its recrements and feculencies, otherwiſe unapt to be purged out, about the Fontinel, and there being impeded in its Circuit by them accumulated together, it is extravaſated, and for that cauſe brings on a fierce Phlogoſis. Such an affection not long ſince happening in a renowned ancient perſon, and being neglected from its commencing, within a ſhort ſpace of time degenerated into a Gangrene; notwithſtanding from which by the help of appropriated remedies carefully exhibited, as well inward as outward, he eſcaped not without great danger of life. At ſome other time hereafter perhaps, when treating of Cutaneous diſeaſes, we will ſpeak more largely of the Ætiologies and Remedies of an Inflammation, and of an Abſceſſe or Impoſtumation and Spachela. At the preſent we will conſider the other Symptomes of Fontinels.

The ordinary and beſt of theſe is, that the extravaſated blood may be reduced.

How it is done.

What Remedies there is need of.

For this end oftentimes purging and bleeding are required.

An Inflammation ſometimes happens to old Iſſues.

2. Whenever an Iſſue throws out too much Ichor, which for the moſt part is thin and very ſtinking, and ſometimes diſcoloured, ſo that the ſo vaſt loſs of humour, and that ſtinking, not to be endured, do require a Remedy; in ſuch a caſe there will be

2. An Iſſue pouring out too much and ſtinking Ichor requires remedy.

two

Of which there are two Intentions.

two chief Therapeutick Intentions, *viz.* Firſt, that the mixture of blood be ſtrengthened, leſt its conſiſtence ſhould be too prone to diſſolution and ſerous efflux: Secondly, That the tone of the place ulcerated by the Fontinel be preſerved, and rendred exempt from any putredinal ferment, ſo that no taint being there lodged in ſecret, do impart any pollution on the blood paſſing through in Circulation, whereby it being infected, might preſently goe into parts, and the Serum be conſtrained there to diſcharge it ſelf more abundantly.

Firſt, that the Temperament of the blood be reſtored.

This former ſcope of Curing enjoyns ſcarce any thing but moderate purging by intermiſſion, and a regular Courſe of Diet, *viz.* that the Patient be reſtrained from all ſurfeit and exceſs, as to the plenty of Nouriſhment, the quality, and ſeaſons of receiving it; likewiſe more eſpecially from ſmall Wines, Cider and other acid liquors, whereby the blood is wont to be diſſolved into effluxes. For indeed thoſe that are ſo affected, do ſmartly pay for any error or irregularity in Diet, pain being immediately irritated about the Iſſue.

Secondly, to preſerve the tone of the part ulcerated.

For due preſervation of the tone of the place where the Iſſue is made, and exempting it from putrefaction, let ſedulous care be endeavoured, that all naſtineſs be declined, that both the ſolid things put into the orifice, as alſo the Coverings, whether Plaiſters or Leaves of Ivy, or Oyl cloaths, be changed twice every day; for in ſome perſons any of theſe will quickly contract a ſtench, and preſently cauſe the Ulcer of the Iſſue to putrifie. But if this tends to putrefaction, immediately in place of a Peaſe or wooden Pill, let a Pill of Virgins Wax be put in, incorporated with red Sanders and Verdigreaſe: Moreover, let a Fomentation withall, Morning and Evening, with the Decoction of St. *John*'s-Wort, Yarrow, Centaury, *&c.* be made uſe of.

Thirdly, a dry and troubleſome Iſſue requires help.

3. Sometimes a Fontinel like a dry Fountain pours out little or no humour; the reaſon whereof is uſually, either for that the orifice being not deep enough, doth not penetrate the whole skin, which is cured by piercing it deeper; or the Ulcer though hollow and large enough, yet remains always dry, becauſe the Serum doth not eaſily nor in plenty ſeparate from the maſs of blood, by reaſon of its conſiſtence being too much bound up; and then the only remedy is, to wear ſolid things within the Orifice, which may more provoke or twitch the mouths of the Veſſels, for which purpoſe Peaſe made of Ivy-wood, or Box, or of the roots of Gentian or Hermodactyls, are often uſed with ſucceſs.

An Iſſue ſometimes will heal up notwithſtanding all endeavours to the contrary.

4. It often happens, that the Orifice of an Iſſue being too ſhallow, and ſparingly ſweating out Ichor, is grown over with a thin skin with the Peaſe included therein, and the deep hole is healed up quite; for which fault there is ſcarce an apt remedy to be adminiſtred. Wherefore it is better to cloſe that Iſſue (rather than always in vain to fret the skin) or transfer it to ſome other place.

Sometimes it hath ſpongy fleſh growing about the lips.

5. The ſore of an Iſſue tending to healing, and being forbidden, often procures a ſpongious fleſh about the edges, and ſometimes in the hollowneſs it ſelf; the reaſon whereof is, becauſe the nutritious liquor being conveyed to the ends of the Arteries and nervous fibres, and being not immediately waſht away by the ſerous Ichor, fixes there, and beginning to be aſſimilated ſtretches out both theſe veſſels to fill the cavity with fleſh, and into theſe rudiments of fleſh both the blood and Animal ſpirits flow moſt copiouſly; and the blood in the mean time being conveyed thither, forms ſprigs of veins within that bulk for its return: Notwithſtanding this fleſh as yet rude and without ſhape, being excluded for the moſt part from the hole, grows up over the edge; and when in this manner it riſes higher than that it may poſſibly be covered and cloathed with skin and Cuticula, it remains always naked and ſpongious. This excreſcency is eaſily enough cured by ſprinkling thereon Eſcharotick powders, of burnt Alum, Colcothar, or Mercury precipitate; for remedies of this kind do eat away the fleſh ſo luxuriating by their acrimony as well as ſtiptickneſs, repel the nutritious humour, and lock up the mouths of the Veſſels. As often as that ſuperfluous fleſh encreaſes about the ſides of the Iſſue, it is a ſign that the nutritious humour flows thither more plentifully than the excrementitious; and for that cauſe in Patients ſo affected that vent proves not always ſo benign. Wherefore, under pretext of this reaſon many are averſe to that remedy (though ſurely it is harmleſs to moſt, although not alike uſefull and advantageous to all.) We have before conſidered the chief diſadvantages thereof, as likewiſe the ſcandals objected thereunto; yet there remains another thing according to the opinion or rather error of the Vulgar, a notable objection againſt Iſſues, which we will here diſcuſs for a Concluſion.

The reaſon thereof delivered.

With

With many in *England* a contumacious opinion is grown up (I know not whether it be ſo in other Countreys) That one or more Fontinels diſpoſe to barrenneſs. Wherefore this kind of remedy, however otherwiſe conducible to health, is ſcrupulouſly forbidden to all marryed Women that deſire Children; of which Prohibition there is no reaſon as yet made out, but only Stories related of certain Women that have been barren having Iſſues; when it were as eaſie to enumerate more barren women without Iſſues, and many others that have been fruitfull with them; and truly I uſe to retort (whenas there is no need of any other refuting) this as a chief Argument againſt that opinion. *The common error is that Iſſues diſpoſe to barrenneſs.*

SECT. III. CHAP. V.

Of the Diſeaſes of the Skin, and of their Remedies.

After Attractive Remedies of the *Cuticula* and Skin, namely Iſſues and bliſtering Medicines delivered before, by a certain Law of Method we are induced to handle Diſeaſes of thoſe parts, and other kinds of Remedies of divers ſorts; the true Ætiology of which will afford matter of moſt pleaſant as well as profitable ſpeculation.

As for the fabrick and uſes of thoſe parts, it needs not that I ſhould here repeat all things already accurately deſcribed, and well known in Books of Anatomy. It may ſuffice us to note concerning the *Cuticula*, that this outward skin is thin and denſe, without blood and without ſenſe, as deſtitute of Veſſels and Fibres, which cleaving to the inward skin, covers and defends it from outward injuries. This is every where full of pores, into whoſe orifices the Veſſels diſcharging ſweat do open, which *Malpighius* viewing more accurately with a Microſcope, a little before their gaping or opening, affirms to be endued with little Valves, for the retaining or free breathing forth of ſweat: but I confeſs they lye hid to me. *A Deſcription of the Cuticula.*

The *Cuticula* being taken away by Fire, or Phænigmons, the skin appears naked, and looks red, by reaſon of the ſanguiferous veſſels. But this is a thicker membrane, as to its greateſt parts, formed of filaments of Veſſels bringing blood, of Nerves, and of nervous Fibres, variouſly interwoven and complicated among themſelves, among which numerous Glandules and Lymphaducts, or Veſſels diſcharging Sweat and Vapours, are thickly interpoſed. The ſubſtance hereof is related to be double by moſt Anatomiſts, the outer is nervous, the inner fleſhy, or rather glandulous; for an example of which, the Rind of an Orange is brought. If the skin be viewed naked by a Microſcope, by the renowned *Malpighius*'s obſervations, Firſt there preſents it ſelf a body in form of a Net, in whoſe thick holes are contained not only paſſages of Sweat, but alſo very many Teats in form of a Pyramid, riſing out of the skin in parallel ranks, and paſſing into the *Cuticula*, where being ſtretcht out in length, they are divided as it were into many little Fibres; which the ſame Author hath determin'd to be the ſenſe of touching. Beſides theſe, the ſubſtance of the skin contains very many Glandules, by which means the Lympha or watery matter is carryed by the Lymphaducts or excretory Veſſels, out of the Arteries to the Pores. For indeed the moſt accurate *Stenon* hath obſerved, *that its Glandules lye under every pore*; which become either greater or leſſer, according to the uſe of ſweating: the ſweat or vapours continually ſtreaming out of theſe by the excretory veſſels, avoiding the excrements, do moiſten the nervous Teats in their paſſages, leſt perchance they ſhould grow dry. *Of the Skin. The pyramidal Papillæ the Organ of ſuling. The Pores and Glandules of the Skin.*

As to the pores or paſſages of Sweat, they are diſcovered by a Microſcope to be of two kinds, *viz.* The greater, in moſt of which the roots of the hairs are implanted, and by interſpaces, on both ſides of each wrinkle of the skin, are diſpoſed in a parallel rank: Or ſecondly, they are the leſſer Pores, which being numberleſs, do fill up all the ſpaces between the former in moſt thick Punctums or pricks. For indeed the whole skin with its wrinkles, appears like a Field furrowed by a Plow, and afterwards harrowed with the ranks turned, or rather oblique; ſo that its ground *The Pores twofold, greater and leſſer.*

The wrinkles and furrows of the Skin.

being eminent above the furrows of either kind, there remain in its plain, Figures very much of a Rhomboidal or a Diamond-faſhion; and accordingly as thoſe furrows, with their banks or flattes, are either ſhorter and leſs, or deeper and greater, the texture of the skin appears either delicate and thin, or thick and courſe. This kind of Conſtitution although it be moſt owing to ones birth, and to the primogenial growing together of the humours, is however manifoldly altered by reaſon of the various accidents of the enſuing life. A more groſs Diet, difficult labour, injury of Air, and chiefly exceſs either of heat or cold, render a skin more rough: alſo contrariwiſe a nice and delicate education renders its tone more fine and ſoft.

From whence the Roughneſs or Fineneſs of the skin.

Depends much on the Humours filling the pores.

That the skin may become more neat, ſmoothe and equal, it avails much that all its pores be filled with a benign, mild and unctuous humour; for ſo, whileſt all its pores become full, and extended, the level of the whole skin appears more ſmooth: Notwithſtanding, if a vicious humour furniſh thoſe pores, or the benign humour that was in them be too much exhauſted, for that cauſe the skin will become rough and full of wrinkles. Wherefore if any endowed with a moſt ſoft and even skin, ſhall wet their hands in a Soap Lather, Lie, or Lime-water, or alſo for ſome time in warm Blood, preſently the furrows and wrinkles will grow greater and deeper, the ſaline humour being drawn out by the other Salts out of the pores; wherefore more delicate women ſcrupulouſly decline waſhing with Soap or any other things that furrow the skin.

From the ſudden ſhutting up of the pores.

Neither only the humour being too much exhauſted out of the pores, but alſo retained in the ſame either unduely or above meaſure, doth render the skin rough and unequal. The hairy pores (which though they are not the only, yet are much the paſſages of Sweat) do conſtantly ſend out more plentiful Effluvia's for the ſake of tranſpiration, wherefore they ever ſeem greater and more open; but if it ſhall happen that theſe are ſuddenly obſtructed by any outward cold, the Vapours being reſtrained within, they do every where ſwell up the skin about the places where they break out, and liſt it up into little heaps: from hence if at any time our bodies are expoſed naked to the Northern wind, or are plunged in a River, the exterior Superficies before ſmooth and ſoft, will become rough and rugged, like the skin of a a Gooſe new pull'd. Without doubt thoſe greater pores, being, according to the furrows of the skin, planted parallel and as it were in a rank after the manner of a *Quincunx* or exact Square, are made as ſo many pitts for the planting of hairs as it were trees; for ſo they appear in four-footed Beaſts, and in ſome hairy parts of men.

In the larger pores are the roots of the hairs.

Theſe things being thus briefly declared concerning the *Cuticula* and Skin, as touching their frame and uſes, there is way enough made to ſearch and unfold the Diſeaſes of the ſame parts, and the reaſons of healing them.

No Diſeaſes of the Scarf-skin.

Wherefore firſt ſcarce any Diſeaſes properly belong to the *Cuticula*, it being devoid of life and ſenſe. This ſometimes being too thick hinders Tranſpiration, and alſo ſometimes by reaſon of accidents in ſome places it grows too thick and callous: but it ſelf being clearly unſenſible it is never ſick, notwithſtanding this is a cauſe that ſome diſtempers which might be blown off by Tranſpiration, do cleave to the ſuperficies of the skin, inaſmuch as the dregs of the blood, and humours, and recrements being thruſt forward outwards, having paſſed through the whole skin, when they cannot evaporate wholly by reaſon of the thickneſs of the Scarf-skin, being faſtened in the outer skin, produce various diſcolourations, and ſtains thereof; of which ſort are thoſe ſpots called Heat-ſpots, Freckles, or Ephelides, as alſo ſcorbutical and malignant ſpots, alſo Pimples and whatſoever other ſtains without any ſwellings or roughneſs do ſeem to beſprinkle the skin or outward Scarf-skin, with marks, or ſome little disfigurings.

The cauſe of ſome.

The Cutaneous diſtempers reckoned up.

But truly as to what belongs to the diſtempers of the Skin it ſelf in general, ſince they are various and manifold, they are wont to be diſtinguiſhed under a various reſpect, and chiefly that they are either with or without a Tumour; we have but now taken notice of theſe latter ones.

Diſtempers in the skin with or without a tumour.

Diſtempers of the Skin with a Tumour, are either univerſal, diſperſed throughout the whole body; or are particular, being raiſed in theſe or thoſe members, diſperſed or as it were by chance.

The former either happen upon a Feaver, as chiefly the Small-pox, Meaſles, or other malignant wheals, whereto alſo may be added the fleeting puſhes of Infants; or happening without a feaver, as the Itch, Tetters, and leprous diſtempers.

The

The outward particular Tumours, or diſperſed ones, for the moſt part do not ſeize upon the skin only, but alſo upon the parts ſubjected, *viz.* now the carneous, another while the tendinous, or membranous or glandulous, and for that cauſe do exiſt of a ſundry diſpoſition, and of a diverſe form. To diſcourſe particularly concerning all theſe, and to aſſign the reaſons of their Cauſes, and Cure of every one, would be a matter not only of an entire Tract, but of a great Volume: Wherefore, for the preſent we will only briefly ſpeak of the Diſtempers merely or for the moſt part Cutaneous (of which ſort are all ſpots and Pimples, as alſo the Scab, or Itch, Tetters, or leprous Maladies): perhaps, an opportunity may happen, when I may treat more ſpecially of Tumours of every kind.

1. Spots call'd Ephelides.

Firſt then (that we may begin with Spots as Affections of leſſer moment) thoſe offer themſelves called *Ephelides*, becauſe they are chiefly cauſed from the Suns heat; for that cauſe frequent in the Spring, and increaſe moſt in Summer, again in Winter they ſoon vaniſh. Moreover, whereas they happen in the more beautifull perſons, and of a thinner skin, they break out chiefly in thoſe places where the *Cuticula* is moſt thick, and is expoſed to the Sun and Air, *viz.* the face and hands, of a colour yellowiſh or brown, in magnitude of a Flea-bite, but they exiſt unequal and irregular as to their Figure. Theſe differ little or nothing from thoſe browniſh or yellowiſh ſpots which ſome call Lentigines or Freckles, which conſiſting of the bigneſs of a Lentil, mark the parts of the face as it were with many drops.

The deſcription of the Ephelides.

The matter and cauſe thereof.

The matter of theſe ſeems to be a more thin portion of the cholerick humour, allured outwards by the force of the Sun attenuating it, and opening the pores of the skin; which beginning to be evaporated, is fixt to the inſide of the outmoſt skin or *Cuticula*, which it cannot paſs through. Surely it is a ſign theſe ſpots proceed from Choler, or other yellow ſcums of the blood, becauſe they are chiefly familiar to them whoſe hair is yellow. Moreover, the reaſon is manifeſt enough, becauſe they ariſe more often in a fair Complexion, and in thoſe parts expoſed to the Sun and Air; for their more thin skin tranſmits the humour rarified by the ſolar heat ſo far untill it is retained by the thicker Scarf-skin, near the places of iſſuing out. This affection preſages or indicates no evil, as to the ſtate of health; and although in appearance it repreſents ſomething of deformity, notwithſtanding that is made good again, inſomuch that it ſignifies them ſo ſpotted, to be endued with a more pure Conſtitution.

Lenticular Spots.

Beſides theſe ſmall freckly ſpots there are others much larger, above a hands breadth in magnitude, which deform the skin in divers places, eſpecially about the breaſt and back, one while with brown, another while with pale or blackiſh ſpots. Theſe at certain times, as I have obſerved in many, being wont to ariſe in certain parts and vaniſh again, are commonly called Liver-ſpots, and thoſe moſt markt with them are thought to have a Liver leſs ſound, or at leaſt not well ſanguifying; which notwithſtanding is not true on this account, but only inaſmuch as the cholerick humours, when they are not enough ſeparated from the maſs of blood within the Liver, being thruſt forward to the skin do ſo diſcolour it: which fault alſo is imputed to the Spleen; for truly this deformity ariſes, becauſe that the feculencies and excrements of the blood, when not enough received by the Veſſels of ſeparation, are together diluted with the Serum, with which they are conveyed to the skin, and in the ſame place being caſt off by the blood, and deſerted by the ſerous Juice while it is evaporating, they are faſtened about the outer little holes or pores, even as a moſſie down cleaving to the ſtrait places of a River.

Liver Spots falſly ſo called.

The Deſcription and Cauſe of them.

Theſe ſpots chiefly appear in Summer, and moſt upon the Breaſt and Back, *viz.* at which time and in thoſe places men are moſt apt to ſweat: for that ſerous Juice which brought out thoſe dregs from the maſs of blood, into the ſtrait places of the skin, leaves them there, altogether unable to evaporate. This indiſpoſition hath nothing of evil joyned to it, nor is it a ſymptom of any preſent diſeaſe, nor doth it preſage any ſuddenly approaching; Moreover, when for the moſt part it happens to places that are covered, and brings no deformity or trouble, there ſeems little or no need of Cure: but becauſe an opinion is frequent with the Vulgar, that the Liver is eminently endangered by theſe ſpots, and neceſſarily requires Medicine, for this cauſe to ſatisfie the importunate, craving Medicines, we are wont to preſcribe, beſides extern Coſmeticks, even inward hepatical Remedies; whoſe uſe although not very neceſſary, yet becauſe from thence the depuration of blood, and opening obſtructions of the bowels are diſpatcht, they are not altogether in vain. The inward Medi-

cines profitable to this deſign, are deſcribed before among the hepatical Remedies: The Topical or outward are altogether the ſame in theſe as in any other kind of ſpots; ſome ſelect forms of which we will annex.

Peſtilential and ſcorbutick ſpots. Concerning Peſtilential, as alſo Scorbutical ſpots, of which we have purpoſely in another place ſpoken, there is no need here to repeat the ſame; eſpecially becauſe for theſe another method is required, than for thoſe but now deſcribed; inaſmuch that in one kind of ſpots, Medicines for the moſt part outward are wont to be adminiſtred, without Splanchnic or Cordial medicines, but in the other kinds only inward medicines, without any that have reference to the Skin.

The Cure of the Spots. Wherefore, as to the ſpots called Freckles, Lentigines, and thoſe commonly called Hepatical, they properly belong to the Art of Beautifying; and for the taking away theſe Deformities of the Skin, only Coſmetick Remedies are preſcribed, without any method of healing. There is every where a plentiful harveſt of theſe with curious Ladies, and others, that are ſolicitous of cleanſing their skins; yet all theſe, foraſmuch as they only reſpect two Intentions of healing, may be reduced to theſe two heads; *viz.* either by opening the pores of the skin and Scarf-skin, and ſometimes by excoriating this, they do endeavour to have the humour drawn outward, and alſo to be evaporated; or on the other ſide, and not with leſs ſucceſs, thoſe things are adminiſtred that may drive back the ſpotty matter, and force it inwards. We will annex here in order ſome uſual Forms of the Topicks of either ſort, being rationally found out, and frequently made uſe of happily enough; becauſe it is not lawful without offence of the Great Ones to detect the more ſecret myſteries of the Coſmetick Art, and to profane it among the Vulgar.

Forms of Coſmeticks.

1. which cleanſe the skin. Firſt therefore for cleanſing the skin, and drawing forth the matter of Spots:

Take of a ſmall ly of Salt of Tartar four ounces, Oyl of bitter Almonds made by expreſſion, as much as ſuffices, in ſuch a proportion let it be mingled, that the liquor turn preſently white, and ſo remain; with this mixture let the parts be anointed morning and evening, and gently chafed.

Take of Aron-roots, Bryony, Solomons-Seal, of each one ounce, Powder of Fenugreek-ſeeds one dram, of Camphir half a dram, theſe being beat together, pour on them three ounces of Oyl of Tartar per deliquium, *let it be preſſed and applyed with a rag twice a day.*

Take of quick Brimſtone in powder one ounce, black Soap two ounces, tye them in a rag, and hang them in a pinte of Vinegar for nine dayes; after let it be uſed by waſhing the part twice a day, and chafing it.

2. which repell the ſpotty matter. Secondly, For the other Intention of diſcuſſing the ſpots from the skin, and repelling their matter inwards, *Lac Virginis* was a renowned Remedy among the Ancients, and is as yet commended and made uſe of by many: The Preparations are well enough known, *Viz. A Solution of Litharge made in diſtilled Vinegar, by pouring of Oyl of Tartar* per deliquium, *it is precipitated into a white liquor like milk, with which let the face and hands be waſhed twice a day, and gently chaf'd. A remedy like this or of the ſame vertue is prepared out of the ſolution of red Lead or Ceruſe made in the ſame Menſtruum, and precipitated with Alum Water, or a Solution of Sal Gem. Or,*

Lac Virginis.

Take of Camphir ſliced two drams bruiſed in a glaſs Mortar, pour thereon leiſurely the juice of one Lemmon, then adde one pint of White-wine, ſtrain it, and let the remaining Camphir tyed in a rag be hung in the Glaſs.

Take Verdigriſe four Ounces, pour thereon two pints of White-wine Vinegar, being put into a Cucurbite-glaſs, let them be diſtilled in Sand, let the Phlegme be kept for uſe, with which let the face be anointed twice a day.

For this purpoſe alſo the Phlegme of Vitriol doth notably conduce. It ſuffices ſome to uſe the diſtilled ſimple water of Bean-flowers, or of Fumitory, or the liquor of a Vine diſtilling from the Boughs cut in the Spring-time. Notwithſtanding the more nice, and thoſe who chiefly boaſt to underſtand this Art, are ſcarce content with any Remedies but Mercurial, wherefore the following water is commended and ſold by Empiricks at a great rate againſt all foulneſs of the face whatſoever.

Take

Take of Mercury ſublimate one ounce powdered, put it in a Tin Veſſel with three pints of Spring-water, let them ſtand twenty four hours ſpace, ever and anon ſtirring it with a wooden Spatula untill the whole liquor grows black, which notwithſtanding being philter'd through brown Paper, becomes clear; with a rag or a feather dipt in this, let the face be gently done over once or twice in a day. *A Mercurial Coſmetick water.*

This Remedy doth moſt notably help againſt all cutaneous Deformities, *viz.* inaſmuch as it drives away the humours within the little pores, and thoſe impacted within the little holes howſoever ſmall, diſſolves the inveterate and ſtubborn combination of Salts or Sulphurs, and reſtores the whole skin, (where it is applyed) though evilly framed as to its pores, and makes it well coloured. Wherefore it is uſefull not only to cleanſe the ſpots of the face, but alſo to take away wheals and its redneſs, as alſo the Diſeaſe of the Eriſypelas. Moreover, ſometimes it happens that many parts of the face, eſpecially the Noſe and Forehead, are markt with moſt thick Specks looking black, as if burnt by Gunpowder, which proceeds from hence, becauſe the ſudatory pores are ſometimes fill'd with a more thick black humour, another while with little worms with black heads (which little Inſects being ſqueezed out of the pores, and expoſed to the Sun, are eaſily ſeen to live, and to move themſelves) and in ſuch a malady of the skin, no Lotion or Oyntments are wont to profit, but what are Mercurial; notwithſtanding to this Hony there is a Thorn at hand more than enough malignant. For the particles of the Mercury together with its Salts (by which they are divided and ſharpened into ſmall bits) being applyed to the face, do ſhake off the peccant and uncleanly matter out of the Pores, and expell it thence, but having driven it back, they purſue it in, and readily inſinuate with the Blood and nervous Liquor, whoſe temperaments they prejudice. Yea by meeting with theſe they imprint very often on the Brain and ſometimes on the Præcordia and other parts, their virulency that can never be wiped out. From hence it is frequently obſerved, that women or men that have long uſed Mercurial Coſmeticks, are troubled with a Vertigo, and convulſive Diſtempers, or are obnoxious to paralytical, and their Teeth grow black, and ſometimes fall out. *Its Vertue.* *Its familiar uſe is not ſafe.*

SECT. III. CHAP. VI.

Of the Mange or Scab with the Itch.

After the more ſimple maladies of the skin, *viz.* thoſe which happen without any Tumour and Ulceration, and only deform it with ſpotted appearances, we will now in order treat of the more grievous Affections, and thoſe which diſſolve the Unity, and eſpecially of the Pſora or Scab, which in ſundry and frequent places of the whole Body doth much infeſt the skin with a painful Itch, and with ſmall Puſtles and breakings out, being ſometimes dry and often ſcaly, and another while moiſt and diſpoſed to ulceration; and a malady of this ſort is moſt properly the Diſeaſe of that part, conſidering it frequently begins in the very skin by reaſon of ſome outward Contagion, and often receives Cure by certain Remedies applyed to the skin only, at leaſt the reaſon of both holds ſo far, that it is ſeldom otherwiſe undertook or perfectly cured. *Pſora a diſeaſe properly cutaneous.*

The Pſora or Scab is vulgarly deſcribed to be a breaking out of Puſtules and wheals throughout the whole body, here and there, procured from a ſharp and ſalt humour heaped up in the Pores of the skin, and that it may be diſcuſſed from thence, induces a notable Itch, and a neceſſity of ſcratching. *Its deſcription.*

That we may ſearch duly into the cauſes of this Diſeaſe, and the reaſon of the ſymptoms, we will more deeply enquire concerning the matter effecting and the conjunct cauſe thereof, that it may certainly be known of what ſort that humour is which is heaped up within the skin, by what means it is either generated there, or comes from ſome other parts, afterwards in what pores or little places it is contained, and how endeavouring to break out, it doth create ſo troubleſom an Itch.

Where-

What humour its matter is of.

Wherefore about the origine of this Diſeaſe, that we may not impute the fault with the Ancients to the Liver or Spleen, the matter thereof is not any particular humour of the four commonly ſuppoſed ones, not Phlegme, nor yellow Choler, nor black, neither alſo the blood apt of it ſelf to be extravaſated; moreover neither doth it ſeem to conſiſt of two or more of theſe humours mixt together. For though ſuch humours be granted, notwithſtanding if this Diſeaſe always conſiſt of them, it would not ſo eaſily be catch'd by a meer and light contagion, or receive Cure by an Oyntment alone. Wherefore it is rather to be ſuppoſed, that the morbific matter is the humour of the Lympha conſtantly reſting in the glandules of the skin; notwithſtanding degenerating from its genuine diſpoſition, that is to ſay, its volatile ſalt, into an acid or otherwiſe offending diſpoſition. For when the continual Supplements from the blood come to this ſo depraved, and unceſſantly evaporating, theſe Juices new and old do not eaſily agree, or are united, but boyling together after the mutual cuſtom of diſſimilar Salts, they are coagulated into a recrementitious matter, which filling and diſtending the pores of the skin, every where raiſes it into Tumours; Moreover it ſomething hinders the Blood in its paſſage, and conſtrains it to be extravaſated. From hence thick Puſtules are raiſed, and becauſe that matter paſſing into an Ichor is compelled by the Serum and Blood purſuing it ſtill forward, they riſe up into little heaps; afterwards the Animal Spirits entring inordinately into the nervous Fibres, that they may promote the throwing off that ichor, do cauſe the ſenſe of that troubleſome itch.

Not any of the four common humours.

But a humour plac'd in the Glandules of the skin.

The deſcription of that Juice or Humour.

Indeed an inſpection with a Microſcope doth moſt clearly diſcover that there is a lymphous humour in the glandules of the skin which lye under all the ſweating pores, treaſured up for ſome uſes, ſo that according to the plenty and diverſe ſtay thereof, theſe Glandules exiſt more or leſs turgid. This Juice is laid aſide by the Blood, through the Arteries, in theſe Glandules, that this little burthen being caſt off, it might return more eaſily through the veins; in the mean time being repoſed there, it hath its uſes, *viz.* In the firſt place continually moiſtening the miliarie Teats, which lying under the nervous little Fibres, are the proper Senſory of Touching, it preſerves them from dryneſs, which would hinder the Senſe; alſo it imbues the aduſt effluvia's paſſing unceſſantly from the blood being kindled, in their paſſage near the skin, with a certain moiſture, and renders them fit to be voided by the pores; and whileſt part of this humour doth ſo continually evaporate with the Effluviums of the blood, thoſe expenſes are repaired by the Lympha continually freſh, being depoſited by the Arterial blood as is abovesaid.

How it degenerates.

Notwithſtanding this œconomy of the Region of the skin is not always ſo regularly kept, but that the glandulous humour falling from its own diſpoſition and function, not only will provoke in the skin, but ſometimes in the whole body, preternatural affections of divers ſorts. This growing clammy, and cleaving more obſtinately in the little Cells obſtructs tranſpiration; and immoderate ſweating proceeds from its too plentifully flowing out, and from the ſame reſtagnating inwards, a more than uſual Diureſis. Moreover, as to what belongs to the Scab and puſtulous eruptions, that humour as it is wont to be depraved many ways, ſo chiefly theſe three, and is wont to enter into a coagulative diſpoſition with the Serum, being freſh poured out from the blood, *viz.* Firſt the Blood it ſelf being very impure, and alſo diſſolved, it leaves its corruptions and ſuperfluous droſs in the cutaneous Glandules, which in the ſame place putting on the nature of more corrupted ferment, they boyl up with other adventitious Juices, or paſſing by theſe, and are diverſly thickened, and ſo they beget not only puſtulous affections, but alſo leprous of divers kinds. From hence the daily and often eating of Shell-fiſh, and alſo of others; and of ſalted meats that have been hung in the Sun or Smoak; alſo the taking diſagreeing Drinks, and venemous Medicines, do cauſe cutaneous and frequently dreadful eruptions.

This is done three ways.

1. By reaſon of impure Blood.

2. By meer ſtagnation.

Secondly, The humour being heaped within the cutaneous Glandules, ſometimes doth not only become puſtulous by a meer ſtagnation, but alſo frequently Louſie. Wherefore, not only they that have been long in priſon, but alſo thoſe who being of a ſedentary life, are uſed to naſtineſs and ſluttiſhneſs, do live obnoxious to the abovementioned maladies; inaſmuch as the cutaneous humour being not at all eventilated, is corrupted by mere ſtanding, after the manner of putrefying water, and ſo it puts on the diſpoſition of a corrupting ferment; to which moreover Supplements of putrefraction come from the blood in the like manner depraved.

3. By Contagion received from without.

Thirdly, If perhaps theſe Cauſes are wanting, that the glandulous humour of the skin,

skin, neither contracts any ſtain from fault of the blood, nor its own proper ſtagnation, notwithſtanding virulent ſteams communicated from without, render it no leſs prolific as to thoſe diſeaſes. This is manifeſt by common obſervation eſpecially, foraſmuch as they that have health moſt, and are endowed with the beſt Conſtitutions, ſcarce ever eſcape free from the ſame, if they lye in the ſame Bed either with a ſcabby perſon, or where he hath lately lain: and not only ſo, but moreover the Linnen of the Scabby, oftentimes waſhed with other Linnen have beſtowed the contagion upon others. Surely, the taint of no diſeaſe (the Plague only excepted) is more eaſily or certainly propagated than this of the Mange.

The reaſon of its moſt ſudden contagion is unfolded.

If the reaſon of this be enquired into, we preſently ſay that the liquour ſuſceptive of the ſcabby taint is mightily expoſed, and moſt eaſily diſpoſed unto it; and indeed much more ready to either, than the Blood or Nervous Juice. For the glandulous humour of the skin abounding in the outer ſuperficies of the body, firſt imbibes every atome let in by holes and pores every where open, and anticipates them from the blood. Moreover, that this is ſo ſoon infected with a ſcabby Contagion, both the activity of the ferment communicated cauſes it, and alſo the proneneſs of the glandulous liquor to degenerate. For indeed the effluvia's falling from the breaking out of the ſcabby skin, are aptly enough compared to the Yeſt of Ale, remaining on the top as it were its outmoſt Coat; of which if the leaſt portion be taken from thence, and mixed with other new Ale unfermented, preſently it ferments the whole maſs how great ſoever, and changes it into the diſpoſition of the liquor from whence it was taken. Certainly there is a very conſiderable energy, which the particles however ſo ſmall and little, carryed to the higheſt activity, are able to perform; but eſpecially if they fall into a liquor (of which ſort is the cutaneous) made up together of ſubtile particles of ſeveral ſorts, as well partaking of the blood, as of the nervous Juice, and for that cauſe moſt readily apt to be fermented. Whereſoever therefore theſe effluvia's of the Contagion aboveſaid hit againſt any outward part of a healthful body, firſt they will infect the cutaneous humour only planted in that place, but then the particles of this ſo corrupted, being received by the venous blood, and preſently delivered to the Arteries, are diffuſed through the entire habit of the body, and in a ſhort time defile the whole maſs of this Humour, and make it ſcabby.

The Contagion when any where received, preſently ſpreads over the whole skin.

Of the Itch.

From theſe Cauſes of a Pſora as well adjunct as procuring being unfolded, the reaſon of the firſt ſymptoms, or breaking out in Puſtules, is manifeſt enough; but as to the other, *viz.* the Itch, as it is troubleſome to Senſe, that the formal reaſon thereof may be known, we ought to conſider to what Senſory or organ of ſenſe it properly belongs, and of what ſort its paſſion or affection ſhould be.

It belongs to the Senſe of Feeling.

Concerning theſe things, firſt it is ſure it belongs to the ſenſe of touching, and that the firſt Inſtruments hereof are Teats faſhioned like a Millet, and their little Fibres diſperſed through the whole skin, as we have before declared. Moreover with this ſenſe all the nervous fibres are endowed, being diffuſed throughout the whole body. Notwithſtanding, whereas there are two ſupream paſſions of Touching, and as it were generical, *viz.* *Pain* and *Pleaſure*, it is deſervedly doubted to which of theſe Itching ought to be related. For the ſolution of which, we ought to ſhew by what means the Animal Spirits, being inmates to the organ of Touch, are affected in Pain, and alſo after what manner in Pleaſure; then their demeanour alſo as to the Itching being deſign'd, it will eaſily be manifeſt of what Province this Paſſion is, and in what things the nature of it, and the manner of its acting do conſiſt. Let the Reader pardon me, if I ſhould by way of digreſſion expound this more at large, and even to tedioufneſs, becauſe this Ætiology ſeems very neceſſary both to the underſtanding and curing of moſt outward diſtempers. Pain being diſtinct from Sadneſs, and belonging to the Touch, is uſed to be defined, *A troubleſome feeling proceeding from the diſſolution of Unity*. And indeed it takes its origine as often, and in as much as any ſenſible thing, diſagreeable or improportionate, being applyed to that organ of ſenſe, divides and ſeparates the fibres one from the other; and for that cauſe repelling the animal ſpirits inhabiting in them, from their wonted and quiet emanation, diſtracts them from one another, and as it were puts them to flight; then preſently foraſmuch as that outward repulſe of the ſpirits, is communicated by a continued order of other ſpirits, to the firſt organ of Senſe, it ſtirres up the Spirits dwelling there into the like confuſions, ſo a perception is cauſed of grief or pain inflicted outwardly. In truth the whole ſeries of animal ſpirits which are affected with pain, as it were ſome ſingular member of the ſenſitive Soul, conceiving trouble, as it were,

Of what ſort its Affection is.

The chief Affections of feeling are Pain and Pleaſure.

The formal reaſon of Pain.

from

from the impreſſion of the object, is forced to be wrinkled with pain, and to contract it ſelf into a leſſer dimenſion.

The Solution of the Unity always the cauſe of it.

When a diſſolution of Unity is ſaid to be the cauſe of pain, we muſt not underſtand it ſo as if this affection only were cauſed from a wound or blow inflicted upon the body, for the ſame thing is uſed to be induced from cold, heat, wind, from the extravaſating of the blood and of other humours, or their being heaped up together in ſeveral places, oftentimes the faſhioning of the member remaining as yet entire; in which caſes, although the continued parts, and chiefly the fibres and filaments, are not at all cut off, notwithſtanding they are in every Affection of grief pulled from their uſual poſition, either by the oppreſſion of the object, or by ſtrange particles forced like wedges, and are compelled into too much tenſion or diſtorſion, or divulſion; and for that cauſe the inmate ſpirits being pulled from their mutual embraces, and diſſipated, are ill at eaſe, and incur the paſſion of pain or grief.

What Pleaſure is.

Pleaſure is oppoſed to Pain, and is a manner of Feeling clearly contrary thereunto; which takes its origine, inaſmuch as a pleaſant ſtroaking being made upon the organ of Senſe, the ſpirits flock thither, and preſently being thickly gathered together, and overſpread with a certain delight, they do as it were exult and rejoyce together in the organ: afterwards, inaſmuch as the ſpirits enter into the like triumph or rejoycing within the *Corpus ſtriatum*, a perception of pleaſure is ſtirred up.

Its formal Reaſon.

It chiefly conſiſts in removing of Pain.

The greateſt pleaſure which is offered to the Touch, conſiſts in this, that the cauſe of Pain being removed, the parts formerly affected by it, may recover their wonted temper and frame; for ſo the animal ſpirits being before put to flight, and diſperſed from one another, they recollect themſelves, and ruſhing into the places from which they were baniſhed with reinforced ſtrength, they prepare themſelves to rejoyce. From hence the Peripateticks placed the formal reaſon of Pleaſure only in the removal of ſomething that was troubleſome, as when the exceſſe of cold or heat is received by an oppoſite and more agreeable ſtate. Indeed the tangible object (becauſe it is alwayes thick and dull) doth ſcarce any way elſe (excepting Venery) allure the animal ſpirits into heaps to the organ of Senſe, unleſs for that it removes their former confuſion.

What the Itch is.

From theſe things ſo deſcribed concerning thoſe paſſions, it is eaſily manifeſt, that the Itch according to the formal account thereof, is neither perfectly nor fully either Pain or Pleaſure, but imperfectly and as beginning, partakes of both. For really the ſcabby matter being heaped up within the pores of the skin, and making the ſolution of Unity in many places, enclines towards pain: yet as it is volatile, moving, and haſtens towards vent, for that cauſe the Animal ſpirits are not put to flight from the Fibres although pulled aſunder, neither are they driven back with ſenſe of pain; but the contrary, as if being ſtronger than the humour infeſting, they were able to caſt it forth, they being wrapp'd up more thick, but irregularly within the cutaneous fibres, do twitch them together variouſly, and draw them on, that they may the ſooner diſcharge the morbific matter, and expell it forth. Wherefore inaſmuch as the Animal ſpirits being neither put to flight, nor repulſed, but flowing together in crouds into the organs of Touching, they manage themſelves there tumultuouſly, and diſorderly, and as it were by tickling the ſenſible fibres do provoke them into ſmall Convulſions, no pleaſure, but a troubleſom feeling, nor alſo is it Pain, but a Paſſion clearly diverſe ariſes from it. But as ſoon as by rubbing or ſcratching, the plenty of Spirits aſſembled about the organ of Senſe, begin to be better diſpoſed, and as it were reduced into order, from thence a thorough feeling of Pleaſure is introduced.

How the Spirits are moved in it.

A certain medium between Pain and Pleaſure.

Wherefore the Itching ſeems to be a middle-ſtate between the beginning of Pain and Pleaſure, or a paſſage of the Spirits from the rudiments of that, towards the full compleating of this. But from this Phyſical diſcourſe by the by, let us return to our Pathologie or diſcourſe of the diſtemper. From what is above ſaid it is eaſie to collect the differences of this diſeaſe.

The difference of the Pſora as to its origine.

In the firſt place therefore the Pſora as to its origine either is got by Contagion, or by reaſon of an ill Courſe of Diet, the fierceneſs and ſupply thereof is communicated by the Chyle and Blood being vitiated, or it is generated in the skin it ſelf, by reaſon of filth, and the defect of Tranſpiration: Whereto we may adde, that ſometimes Infants acquire this taint hereditarily contracted from their Parents.

Secondly,

Secondly, Theſe cutaneous Eruptions as to their form, vary according to the diverſe Conſtitutions of the perſons affected: for in ſome perſons of a cholerick dryer Temperament, or Melancholy, only a dry Scab is ſtirred up, and inaſmuch as it evaporates leſsby reaſon of the defect of the Serum, with an Itching not altogether ſo troubleſome; but in others of a moiſter Temperament, and of more unclean blood, very many wheals and puſtules imbued with Ichor, and moſt of all itching, do very much provoke to ſcratching, and by reaſon of the Ulcers ſtirred up therewith, the Itch is immediately altered into pain. *2. As to its form.*

As to the Prognoſticks, although this Diſeaſe is never of it ſelf mortal or very dangerous, and always eaſie of Cure: yet frequently it contains an evil event; inaſmuch as being long continued, it utterly depraves the blood and nervous Juice, and from it haſtily cured, by reaſon of the matter received within, while it is diſcuſs'd from the Pores, a pernicious taint is brought upon the Præcordia, and Brain, and other noble parts. *The Prognoſticks of it.*

The greateſt hazard from a Scab, threatens Children and Cachectick perſons; as in both of which the taint is more eaſily impreſſed from this Cutaneous humour upon the nobler parts, which afterwards when the outward malady is removed, remaining within cannot be vanquiſhed entirely, but by a very long Courſe of Phyſick, of which neither is capable nor patient; wherefore, ſuch perſons, all care and diligence being adminiſtred, ought to be preſerved from the infection of the Scab as from the Plague. *Moſt dangerous to Children and ill juiced or cachectick perſons.* *Its Cure.*

Concerning the Cure of a Scab or Pſora, two chief Indications preſent themſelves, and each of them two-fold, *viz.* The firſt intention Curatory reſpects theſe two things, Firſt, that the glandulous Humour (its corruptive ferment being wholly extinct) may be reduced to a due temper. Secondly, afterwards that the pores and paſſages of the skin being freed from thoſe Ichorous congealings, may recover their priſtine frame or good temper. *The firſt Indication curatory.*

The Second Indication Preſervatory takes care to prevent theſe two things, *viz.* Firſt, leſt the impurity of the Pſora, or corrupting Miaſma's of the skin, being diſcuſs'd from the skin (while the ferment is expugned) turn back again into the blood and nervous liquor, and bring upon them not only ill temperaments, but alſo (as frequently it uſes to doe) a more conſiderable prejudice upon the Brain or Præcordia. Secondly, alſo let it be endeavoured that the taint of the Humours, and of the noble parts contracted from the Itchy matter, may be eradicated while the faults of the skin are repaired. *The ſecond Indication preſervatory.*

All theſe intentions of Curing, by remedies internal as well as external together, being much and often uſed, ought to be joyn'd together, or at leaſt-wiſe to be interus'd, *viz.* that the morbific matter being diſcuſſed from its receſſes, may not depart into and lye hid in any lurking-places any where elſe, but from every part, inwardly and outwardly, by remedies taken, may be wholly removed away; wherefore Purgatories ought alwayes to begin and end this method of Curing. Although *Helmont* with great pomp overthrows this Cathartick method of Phyſick, and as it were leads it in Triumph, becauſe it doth not cure the Scab by it ſelf, yet we may affirm this Diſeaſe without that remedy can ſcarce ever eaſily be cured, but never ſafely. Moreover Phlebotomy, unleſs ſomething contradict it, is preſently to be celebrated in the beginning; upon theſe, Alteratives that cleanſe the blood and ſtrengthen the bowels, and defend againſt the aſſaults of the morbific matter, challenge their turns; and in the mean time Liniments, or Baths, or topical remedies of another kind, and properly Cutaneous, are adminiſtred: As without which not only Purging and Bleeding, but alſo Diaphoreticks, Diureticks, yea whatſoever remedyes evacuating blood or humours, or altering them, become uſeleſs. We will annex ſome more ſelect ſhort forms of Medicaments, of every one of theſe Kinds but now recited. And firſt for the due undertaking of the Purging part, let there be adminiſtred in the beginning a purging Medicine or a Vomit; alſo after Phlebotomy being uſed (if need require) an Apozeme or purging Ale may be adminiſtred for ſeven or eight dayes. *Both inward and outward Medicines are to be taken together.* *Purges, Bleeding and Alteratives, and afterwards Topicks are required.*

Take of Electuary Diacarthamus three drams, Spec. Diaturbith with Rhubarb one dram, Cream of Tartar, Salt of Wormwood an. half a ſcruple, ſyrup of purging Apples what ſuffices, make a Bolus to be taken with Government. Or, *Forms of Purgers.*

Take Sulphur of Antimony ſeven grains, Scammony ſulphurated eight grains, Cream of Tartar half a ſcruple, make a powder.

Take roots of Polypody of the Oak, ſharp-pointed Docks prepared, an. one ounce, leaves of Senna ten drams, Turbith, Agarick, Epithymum, an. one ounce, Carthamus-ſeeds half an ounce, Citrine Sanders two drams, Anniſe, Carue ſeeds, of each two drams, being ſliced, bruiſed, &c. digeſt them warm in four pound of White wine twenty four hours, pour it clear off without ſtraining: the Doſe ſix ounces by it ſelf, or with a ſpoonful of ſyrup of Epithymum.

Apozems. *Or take the foreſaid Ingredients and boyl them in ſix pound of Spring-water to half, then adde one pound of White-wine, and preſently ſtrain it for an Apozeme to be taken as the former.*

Medicated Ale. *Take roots of Polypody of the Oak, ſharp-pointed Docks an. three ounces, Senna four ounces, Epithymum, Turbith, Mechoacan, of each two ounces, of yellow Sanders one ounce, Coriander-ſeeds ſix drams, prepare them according to art, make a bag for four gallons of Ale; draw it after five or ſix dayes, take twelve ounces more or leſs every morning, for eight or ten dayes.*

For ordinary Drink let a little four-gallon Veſſel be filled with ſmall Ale, wherein may be put the following Bag.

Take the tops of Tamaris, dryed Fumitory an. four handfuls, roots of ſharp-pointed Docks dryed ſix ounces, the rinde of woody Night-ſhade two ounces, ſlice and bruiſe them and mingle them. Or let them take a Bochet of the Decoction of Sarſaperilla, Saunders, with ſhavings of Ivory, Harts-horn, and Liquoriſh.

Altering Remedies. II. As to what belongs to altering Remedies, beſide the Phyſick-Ale for ordinary Drink, there ſeems not need of many others, but only, that a due government of Diet be obſerved, by declining Salt and ſpiced Food, Shell-fiſh, and others ſeaſoned with pickle; alſo abſtinence from Wine, Strong-waters, ſtronger Ale, and from all Liquors apt too much to ſtir and ferment the blood. In a contumacious Pſora, and ſeizing upon a Cachectick body, it will be expedient to adminiſter the following Electuary with a diſtilled water twice a day.

Electuary. *Take of Conſerve of Fumitory, roots of ſharp-pointed Docks, of each three ounces, Troches of Rhubarb, Species of Diatrion Santalon, of each one dram and a half, Salt of Wormwood one dram, Vitriolum Martis four ſcruples, with a ſufficient quantity of ſyrup of Cichory with Rhubarb, make an Electuary, the doſe from one dram to two, twice in a day, drinking upon it three ounces of the following water.*

A diſtilled water. *Take of the tops of Fir-tree, ſix handfuls, of leaves of Fumitory, Agrimony, Fluellin, Liverwort, Brooklime, of each four handfuls, roots of ſharp-pointed Docks two pound, Bark of Elder two handfuls, the outward Rinds of ſix Oranges, cut them and bruiſe them, and then pour upon them eight pints of Poſſet-drink turn'd with middle beer, diſtill them in a Roſe-Still; let the whole Liquor be mingled together.*

Oyntments whereof the Baſis is chiefly Sulphur. III. Oyntments for to anoynt the Skin, are wont commonly and efficaciouſly to be preſcribed for the curing of the Scab; notwithſtanding thoſe which are adminiſtred to many other Tumours or Ulcers, do not help here at all; but Brimſtone and Preparations thereof ſeem to have a ſpecific vertue in this Diſeaſe, ſo that for the moſt part they are put into all Liniments for the Itch, and are the baſis of the whole Compoſition. The Receipt chiefly uſed by the Vulgar is this.

Forms of them. *Take Powder or flower of Brimſtone half an ounce, unſalted Butter four ounces, powder of Ginger half a dram, make an Oyntment.*

A little more neat, though not much more efficacious is preſcribed thus.

Take Oyntment of Roſes four ounces, powder of Quick Brimſtone half an ounce, Oyl of Tartar per deliquium *what ſuffices, make an Oyntment: for ſcent ſake adde one ſcruple of Oyl of Rhodium.*

Other ſtronger Medicines. When the force of the Brimſtone is to be drawn forth or ſtrengthened by other things added,

Take Oyntment of Enula-campane without Mercury four ounces, powder of Sulphur half an ounce, Oyl of Tartar per deliquium *what ſuffices. For the ſame purpoſe the Oyntment*

ment of the roots of ſharp pointed Docks boyled in Butter, or Oyl, with White-wine, to the conſumption of the Wine, and made up with Sulphur and Oyl of Tartar. Alſo thoſe Oyntments are uſed with ſucceſs by themſelves, the more curious abhorring the ſmell of Sulphur.

3. The third kind of Liniment againſt the Itch, is made of Mercury, wanting no guards of Sulphur, or any other Vegetables. But of it ſelf it is too powerfull to be applyed all over the body, but only to the Joynts of the Arms and Thighs, or worn about the Loyns, made up in a Girdle, for ſo it ſeldom fails in curing the Itch. Notwithſtanding there is danger leſt this practice (as it often happens) produce evil and pernicious ſymptomes; for from the Mercurial Oyntment, frequently a ſalivation, alſo ſometimes dimneſs of the eyes, or drowſie or convulſive Affections do proceed: Alſo ſometimes the Poyſon of the medicine within the Præcordia or Bowels produces the dreadful Affections of ſhort breathing, Swouning, or bloody Fluxes. *The moſt powerfull made of Mercury.* *But dangerous.*

The vulgar form of a Mercurial Oyntment, and chiefly in uſe for the Itch, is this. *The Form of it.*

Take of Quick-ſilver reduced into ſmall particles with an acid, or (as they ſay) kill'd, an ounce and a half, freſh Hogs Lard ſix ounces, incorporate them well, ſtirring them long in a Stone or Glaſs mortar.

Neither only under the form of an Oyntment, but alſo after many other wayes the aforeſaid Medicines are wont to be often uſed. For the fume of Cinabar (which is prepared of Mercury with Sulphur) caſt upon Coals and taken in at the mouth, or ſtriking the ſuperficies of the Body, cures the Pſora. The Mercurial Coſmetick before deſcribed, being weaker by two degrees, if it be applyed upon the Skin, chiefly on the ulcerated places, it kills the Scab. Notwithſtanding the uſe of theſe is not always ſo ſecure as to be adminiſtred every where to all perſons. *A Mercurial Water for the Itch.*

Baths are prepared of Sulphur and Vegetables, either apart or together, being boyled in water, which heal this Diſeaſe not as a common Bath, by only waſhing off the filthineſs of the Skin, but alſo by deſtroying the ferment thereof. Moreover, beſide theſe there is another more eaſie and neater manner of healing the Itch, *viz.* Let a Shirt boyled with Powder of Brimſtone in Spring-water, and dryed by the Sun or Fire, be worn next the body for four or five dayes; for ſo that diſeaſe is wont to be cured without bathing, or naſtineſs of anoynting, or evil ſmell. *Baths.* *A Sulphurous Shirt.*

If the Ætiologie of theſe be enquired into, and firſt why Brimſtone is ſuch a ſpecifick Antidote againſt the Itch, that poor and ordinary men (who have not wherewithall to uſe any other Medicine) do take againſt this Diſtemper inwardly only powder of Brimſtone with Milk, and adminiſter it outwardly with Butter, I have already in part given an account, where we have unfolded the balſamick vertue of Brimſtone towards the Lungs. Namely, it is a good expedient in either caſe, inaſmuch as it deſtroyes the acidities of the Blood and Humours, and all the exotick and corrupting roughneſſes, and reſtores a benign diſpoſition to every Juice, *viz.* a mild and an unctuous: and ſo the Particles of Brimſtone any way outwardly applyed, do eaſily enter into the pores of the skin, and being admitted inward, do forthwith work upon the ulcerous Ichor there abounding, kill the Salts there predominating, and procure a balſamick nature to the cutaneous Juice, that it may aftewards agree with the Blood and Serum continually flowing to it. *Why Sulphur is the Antidote of the Pſora.* *The Reaſon of it.*

As to Mercury, it is no wonder if Medicines prepared hereof do throughly heal the places of the skin affected with the Pſora wherever applyed, for by the application hereof, wheals and puſhes, and all malignant ulcers, *viz.* Venereal and Scorbutick, are wont to be tamed. Neither is it a thing to be admired, that theſe Remedies adminiſtred in any private places, as long as they provoke ſalivation, are a Cure of an Univerſal Itch; but really that without ſpitting they can produce ſuch an effect, as that a Girdle wherein Quick-ſilver is ſowed and worn about the Loyns, ſhould aboliſh the Scab of the whole body, and that ſometimes without any ſenſible evacuation or harm cauſed thereby, I ſay the reaſon hereof is not ſo eaſily apparent. *How Mercury cures this Diſeaſe.*

Yet for the ſolution hereof, we muſt ſay that the Particles of Mercury being able to extinguiſh the ſcabbineſs of every Itchy ferment, when they are applyed to any private part, do preſently take away the Scab of that place; and beſides being caught by the venous blood, and diffuſed through the whole maſſe thereof, and a little after they are not only carryed back by the arterious blood to the ſame *The reaſon of its vertue.*

place where taken in, but being brought outward every where, they are depoſited in the skin of the whole body, and in the ſame place deſtroy every Miaſma of the Scab: If it then ſhall happen that theſe Mercurial particles, after they have finiſhed the Cure, ſhould be all evaporated again out of the skin, no ſalivation afterwards, or other prejudice will follow.

SECT. III. CHAP. VII.

Of the Impetigo *or* Lepra *of the* Greeks.

Several names of the Impetigo.

After the Scab with the Itch, it follows that we treat of another Diſtemper, a little a-kin to this by reaſon of the breakings out of little puſtules, which is commonly call'd *Impetigo*, by ſome a Tetter and Morphew, and by others the Leproſie of the *Greeks*. And as it gains ſeveral names, ſo they are variouſly applyed by Authors, and by theſe they deſign one kind of Diſeaſe, and by thoſe another kind. Wherefore, as the names of this Diſtemper are variouſly confounded, and perhaps that as to its nature and formal appearance it has been various in divers Regions, neither may it be altogether the ſame in our generation as in former times, for this cauſe my buſineſs here ſhall not be to deſcribe this diſeaſe according to Books, but from the proper obſervation of the Patients themſelves.

It is deſcribed according to its appearances.

The Impetigo is wont to ariſe and affect after this manner; to wit, little wheals or red puſtules, ſometimes ſingle, and ſometimes many together, are raiſed in divers parts of the body, but chiefly in the Arms or Thighs; to each of which, new ones every where are adjoyned, (the Diſeaſe augmenting) and in a ſhort ſpace of time there become many heaps of riſings of that kind, like cluſters. For the little pimples breaking out daily near to their ſtemme, and ſpreading ſtill larger, diffuſe themſelves into a Circle, and ſo cauſe every heap of Eruptions to be enlarged. The rough ſuperficies of each appears ſomething white and ſcaly, ſo that upon ſcratching the ſcales fall off, and often a thin Ichor ſweats out, which being preſently dryed up again, hardens into a ſhelly ſcale.

Theſe Cluſters of little Pimples being firſt ſmall and fewer, appear perhaps three or four in the Arm or Thigh, or other particular member, about the bigneſs of a Penny or half a dram: but afterwards, if the diſeaſe be ſuffered to augment, they break out every where more frequent, which being leiſurely encreaſed in their ground, afterwards appear to equal or exceed the bigneſs of a Silver Crown, but not always round or of a regular Figure, but diverſly formed. Moreover there is no ſtop in this condition, but the diſtemper, unleſs it be reſtrained with Medicine, breaking out ſtill in more places, and creeping on every where in broadneſs, at length not only covers over the whole member but alſo the whole body with a leprous dry ſcurf; and this kind of Impetigo the Ancients call'd by reaſon of its outrage Ἄγριαν, and for the moſt part accounted it incurable.

The differences of this diſeaſe.

From hence the chief differences of this diſeaſe are made known; and in the firſt place as it is leſs or more malignant according to the faſhion thereof, it is diſtinguiſhed, as it comes nearer the nature of the Scab, or Leproſie, or as it is in a middle condition between both. We are alſo to note, this diſtemper ſometimes infeſts ſome particular members, as the Arms or Thighs, the reſt of the body being untoucht; but ſometimes it begins together in all parts, and every where excites ſcatteringly little Pimples or Cluſters thereof. Alſo eruptions of this kind are in ſome for a ſeaſon, or periodical, and for the moſt part infeſt theſe perſons during Winter only, vaniſhing away about Summer; likewiſe on the contrary, in others they abhorre Winter, and are wont to obſerve the ſeaſon of the Swallow going and coming: but in moſt others the Diſeaſe being continual grants no truce, yea it hath neither remiſſion nor mediocrity.

How it differs from the Pſora and Leproſie.

Moreover, we muſt diſtinguiſh an Impetigo from other Diſeaſes a-kin to it, and firſt from the Scab, and the Leproſie. It differs from the former as to the form of the Puſtules; for every where in the Pſora they are ſingle and remote from one another, although by ſmall ſpaces; here moſt of them break out in Cluſters, concurrently,

currently, and as it were disjoyned by branches with great interſpaces. But between theſe diſtempers a notable difference yet ariſes, in that the Scab is wont eaſily or ſcarce otherwiſe to be propagated or ariſe, but by Contagion; but the infection of an Impetigo is ſo ſeldom or never, that the Miaſma from the Husband doth not paſs to the wife, or from her to him, though they lye together.

Alſo this Diſeaſe differs from the Leproſie, as well in reſpect of the form of its eruption, as of its contagion, which is likewiſe active in this, as in the Pſora; and the breaking out is much larger and more horrid, *viz.* it is every where ſhelly and ſcaly, without intermiſſion, and diffuſed through the whole body.

The material cauſe not a humour of the skin.

From hence it is manifeſt, that the material cauſe of an Impetigo, is not merely a cutaneous humour, by reaſon of effluvia's or a taint received from without, or depraved by reaſon of other accidents, and degenerated from its temperament; becauſe it is not eaſily communicated to others by Contagion, as in the Pſora, neither is it immediately diſperſed throughout the whole body. But indeed little Puſtules breaking out firſt about the initiations of the Diſeaſe ſeem therefore to proceed, for that certain acid ſalt Concretions happen to be in the maſs of Blood (like Tartar in Wine) which when they can neither be concocted or again diſſolved, are here thruſt out into the skin, as there into the ſides of the Veſſel. As long as theſe Concretions are ſmall and few, they are conveyed into the skin in this or that member, and by one or two branches of an Artery; then as Nature is wont to continue the ſame manner of excretion as it began, the matter being carryed every where by the ſame veſſels, to the ſame neſts, near the firſt wheals it cauſes heaps of others round about them; but afterwards when the dyſcraſie of the blood is daily augmented, and that Tartarous matter is generated more plentifully in the maſs thereof, more portions are conveyed by other Arteries, and ſtill by more to the outward places: and for that cauſe alſo more pimples break out both in the ſame, and in other members, which a new matter coming continually by the ſame Arteries, and being placed cloſe to the former, enlarges them every day, and every where dilates them by the addition of other puſtules; and at length if this ſort of Tartar of the blood augment hugely, being carryed out by more or all the Arteries together, it is faſtened in the skin, and in proceſs of time covers over all the ſuperficies thereof with a ſcaly or downright leprous ſhell: And then that cutaneous humour being wholly corrupted, promotes the diſeaſe it ſelf; for it cauſes the ſtock of the morbific matter to be encreaſed, by polluting more, or rather poyſoning the blood and humours, whileſt they paſs in Circulation; moreover diſmiſſing the corruptive ſteams from it ſelf, it renders the Contagion of the ſame diſeaſe unto others.

But tartarous Concretions begot in the blood.

The next cauſe of it.

Wherefore, both the procuring and conjunct cauſes of this Diſeaſe conſiſt in this, for that without any fault of the skin, it happens that the blood is filled with ſalt Particles of a various diſpoſition and condition; (into the preceding cauſe of which diſpoſition we will anon inquire) and where thoſe fixt and acid Salts are eſpecially predominant (as the manner is) they mutually embrace one another, and ſo grow together into Tartarous Concretions; which being thruſt forth into the blood, cauſe eruptions of wheals, as it were neſts of the Diſeaſe; then they being daily and leiſurely encreaſed both in number and largeneſs, according to the ſupply of matter, they produce the beginning, augmentation, and ſtate of this diſeaſe.

The evident Cauſes.

As to what relates to the antecedent and evident cauſes, there are two chief kinds of occaſions from which this diſtemper for the moſt part derives its origine; to wit, an evil manner of Diet, or a taint of the Scurvy, or Pox, or other Diſeaſes left in the body, being ill, or not at all cured. We will weigh a little the reaſons of each of theſe.

Irregularities in Diet.

As to the former, beſides the common irregularities in Diet, wherein ſome being too much addicted to eating of fleſh ſalted and afterwards dryed in the Sun or Smoak, and the drinking of acid Wines, do eaſily contract this malady; Alſo it is a vulgar obſervation, that very many are diſpoſed thereunto by the too frequent or daily feeding on Pork, and Fiſh, and eſpecially Shell-fiſh. There is a notable inſtance of the former, which is, that that food was chiefly forbidden the *Jews* for prevention of this diſeaſe. Alſo there is an example of the other, that in time paſt the Inhabitants of *Cornwal* for the moſt part dwelling on the Sea-coaſt, inaſmuch as the poorer ſort were fed with Fiſh, became very obnoxious to Leprous Diſtempers; inſomuch that for their relief many Hoſpitals were erected in that Countrey. That I may hint in a few words the reaſon hereof, I am apt to think whether that food is rancid,

The daily eating of Pork or Fiſh.

The reaſon thereof inquired into.

or

or otherwiſe improportionate, that it conveys particles not rightly mixed, nor eaſily to be ſubdued to our blood, which being ſo heterogeneous and largely heapt up by a long uſe of ſuch Diet, the ſaline particles of which kinde do eaſily aſſociate themſelves, and ſo do conſtitute Tartarous Coagulations to be exterminated in the skin, and the ſeeds of the Leproſie or of the Impetiginous Evil.

It often follows the Pox and Scurvy.

But yet a plentiful Crop is begot from the taint of the Scurvy and Pox left in the body, and afterwards by the combination of Salts and Sulphur exalted to extremity. We have elſewhere diſcovered the reaſons of the former diſeaſe, and eſpecially of the foreſaid ſymptome coming after it, which being accommodated to our preſent Hypotheſis do make it more clear. And it ſo often happens, that puſtulous eruptions of this ſort do follow an inveterate Pox, although it ſeem to be cured, that none diſtempered almoſt with theſe, wants the ſuſpicion of that ſhameſull Diſeaſe; ſo that the firſt Queſtion of a Phyſician in ſuch a caſe being conſulted, is, Whether the Patient have not at ſome time formerly contracted that Diſtemper? For ſurely the Corruptions of the blood, after they are by a long ſtay become altogether heterogeneous and indomitable, at length acquire to themſelves ſalt Particles, wherewith growing into ſuch like Tartarous Concretes, and being thruſt forth into the skin, produce thoſe Impetiginous Puſtules.

Its Prognoſticks.

As to the Prognoſtick part of this Diſeaſe, although it ſeldom threatens death or imminent danger, yet after it hath taken deep root, the Cure is very difficult, if at all: The Impetigo firſt beginning, and exciting a few Puſtules, and knots of them, perhaps in one or two members, ſometimes admits of Cure, but hardly without a moſt efficacious remedy. But if the Diſeaſe proceed ſo far, that the frequent and broad cluſters of wheals appear diſpers'd throughout the body, then ſmall remedies effect nothing, and the great ones howſoever diligently obſerved, will not eaſily perform a Cure. But if the Diſeaſe, maugre all remedies advance daily, and encreaſe at length into a Leproſie, *Celſus* judges it impoſſible to be cured, and therefore we muſt wholly abſtain from it.

The Cure.

There are two chief Indications concerning the Cure of an Impetigo, *viz.* Preſervatory, which reſpects the cauſe of the Diſeaſe, and the Curatory, which relates to the ſymptomes, *viz.* the puſtulous Eruptions. The vital Indication hath ſeldom place here, unleſs in a deſperate condition, where ſleep and ſtrength fail. The Method of Curing ought to begin with the Preſervatory Indication, which takes away the Cauſes of the Diſeaſe by inward remedies, for otherwiſe external (as in the Pſora) are never adminiſtred with ſucceſs; but the roots of the diſeaſe in the blood being cut off, the cutaneous ſproutings quickly conſume away: for the taking them away, we muſt proceed in one manner when the Impetigo begins by it ſelf, and in ſomewhat a different manner when it follows an inveterate Scurvy or Pox, being ill or not at all cured. We will conſider each caſe throughly by it ſelf, and diſtinctly.

Two chief Indications.

How to be cured, the Diſeaſe beginning of it ſelf.

Therefore whenſoever this Diſeaſe is ſimple, and primarie, and being yet New, let the evident and extern Cauſes be removed; let the manner of Diet, and unwholſomneſs of Air be corrected; therefore thoſe that have been lately too much accuſtomed to ſalt Diet, and the fleſh of Pork and Fiſh, let them change to Diet of good Juice and eaſie of digeſtion. They that inhabit the Sea-coaſt, or Fenny places, let them remove to a dry and clear Air; in the mean while let no leſs care be had to their Drink, by declining thick and foggy Ale, and ſmall and acid Wines too much abounding with Tartar: at length let care be taken leſt their Drink or Food be dreſſed with any mineral waters that are apt to petrifie.

The evident cauſes to be firſt removed.

The conjunct Cauſes how taken away.

Secondly, In reſpect of the conjunct and procuring Cauſe, there are two chief Intentions of Cure, *viz.* that the impurities of the bowels and humours be quickly purged out; alſo that the acid ſaline diſtemperatures of the blood and nervous Juice be altered (whereby the Tartarous matter may be the leſs engendred in them;) for theſe purpoſes Medicines both evacuating and altering are preſcribed of ſeveral kinds. Notwithſtanding, becauſe not all, but the greateſt remedies are here convenient, thoſe which are moſt chiefly of uſe and available, are Catharticks, Phlebotomy, Whey, Chalybeate Waters, Juicy expreſſions of Herbs, Decoctions of Woods, ſteel'd Medicines and Salivation. Some certain Models of each of theſe, and the manner of uſing them, we will annex.

The chief Remedies made known.

1. *A Purge.*

Wherefore in the firſt place, univerſal purging and bleeding being celebrated (as in the Cure of the Pſora) we appoint the following Tincture or purging Infuſion, whoſe doſe is from ſix to eight ounces, to be repeated in ſix or ſeven days.

Take

Take of the roots of ſharp-pointed Docks dryed, Polypodie of the Oak, of each half an ounce, Senna ten drams, Epithymum ſix drams, Rhubarb, Mechoacan of each half an ounce, yellow Sanders two drams, Celtick Nard half a dram, Salt of Tartar one dram and a half, put them in a glaſs with three pints of White-wine, water of Elder-flowers one pound, let them ſtand ſtopt in a cold place three dayes, pour off daily as much of the clear liquor as is ſufficient. A purging Infuſion.

Secondly, For ſweetning of the Blood, and waſhing of the Salts thereof, let ſimple Whey, two or three pints, or with the infuſion of Fumitory, Chicory, and ſharp-pointed Docks, be drunk every morning, for twenty or thirty dayes, if the Stomach will bear it, and likewiſe evening and early in the morning, let a doſe of the enſuing Electuary be ſwallowed. 2. *Whey.*

Take Conſerve of the roots of ſharp-pointed Docks ſix ounces, Crabs eyes, Coral prepared, of each two drams, Ivory one dram, Powder of Lignum Aloes, yellow Sanders, of each a dram and a half, Sal Prunella two drams, Vitriol of Mars a dram and a half, Syrup of juice of Wood-ſorrel what ſuffices to make an Electuary, the doſe two drams. An Electuary.

Thirdly, For the ſame reaſon that Whey, your Iron Mineral waters are preſcribed for this Diſeaſe, and do oft notably help: for when all the other remedies have been in vain, I have with thoſe alone cured a painfull and almoſt leprous Impetigo. Moreover, for more efficacy ſake, let the uſe of Sal Prunella or Vitriol of *Mars*, or of the Electuary but now mentioned, be dexterouſly adjoyned. 3. *Steel'd Waters.*

Fourthly, In ſome endued with too much Serum, and a watery Conſtitution, where the drinking Whey or Mineral waters are leſs requiſite, it is ſometimes expedient that a Decoction of the Woods be aſſumed at phyſical hours, and alſo conſtantly inſtead of ordinary drink. 4. *Decoctions of Woods.*

Take the Shavings of Willow half a pound, of Sarſaperilla eight ounces, white Sanders, Lignum Lentiſcinum, of each two ounces, Shavings of Ivory and Harts-horn, of each ſix drams, Filings of Tin, crude Antimony, of each four ounces tyed in a rag, of Liquoriſh one ounce, infuſe them in ſixteen pound of Spring-water, and boyl them to half, keep it ſtrained for uſe.

Fifthly, Medicines of *Steel*, in that they are every where accounted among the more excellent Remedies, are wont ſeldom to be omitted in this Diſeaſe, although not frequently given with ſucceſs: for moſt Preparations of Steel, wherein the Sulphureous Particles predominate, inaſmuch as they ferment the blood, and irritate it into Critical Effervеſcences, do cauſe theſe impetiginous eruptions to augment rather than diminiſh; notwithſtanding the Salt, Syrup, Tinctures, and infuſions of Vitriol, inaſmuch as they fix the Blood, and ſomething reſtrain the raging of the Salts, do fitly enough agree with the intention of Cure now propoſed; but being weak in efficacy, they do not prevail againſt ſo Herculean a Diſeaſe. 5. *Medicines of Steel.*

Wherefore Sixthly, theſe and many other Remedies nothing availing, many commend *Salivation*, as the ſtouteſt Wreſtler and only match for ſuch an Enemy. Yet the event doth not always anſwer this great expectation; for I have experimented this remedy without ſucceſs in four Patients labouring under a painful Impetigo, which had reſiſted other Medicines. Some of theſe were provok'd to abundant Spitting by Unction with Quick-ſilver, others by doſes of Solar Precipitate; which they have endured for the ſpace of twenty dayes; which time being elapſed, all the ſcaly eruptions and cluſters of wheals have vaniſhed; notwithſtanding, to confirm the Cure, a Diet-drink of the Decoction of Sarſa was appointed, and frequent ſweating under a Cradle, and due purgation between, was continued for a month: Notwithſtanding, this Courſe being finiſhed, when no footſteps of the diſtemper ſeemed to be left, within another month a new ſtock of the ſame Diſeaſe beginning to break out, it encreaſed quickly to its uſual maturity. Moreover, when one of them would repeat this courſe, and another after two relapſes would experiment it the third time, both of them at length after great ſufferings of Pain deſpaired of Cure: Whence it is manifeſt that the Venereal Diſtemper, although highly malignant, and raiſing moſt filthy Ulcers conſuming the fleſh and bones, is more eaſily and certainly cured than the Impetigo. 6. *Salivation.* *Salivation does not always cure this Diſeaſe.*

The

Why the Impetigo is more difficult of Cure than the Pox.

The reaſon whereof if we enquire, may plainly be conceived, for that the cauſe of the latter Diſeaſe conſiſts in a malignant and altogether heterogeneous pollution, infecting and poyſoning the blood and nervous Liquor for a certain time, but not altogether overthrowing, or for ever depraving its temperament; wherefore the Cure is performed by Salivation, or a ſudorifick Diet, eradicating all that venom, and then the natural diſpoſition of the blood and humours remains entire: But in a more difficult Impetigo, the Elemental particles and firſt Conſtitutives of the blood are corrupted, inſomuch that unleſs the natural diſpoſition and conſtitution of theſe are reſtored, all Evacuations and Expurgations of any venemous, malignant and heterogeneous matter, however plentiful and eradicative, do little or nothing prevail. Wherefore, many famous Phyſicians not undeſervedly judg'd this Diſeaſe being confirmed and raiſed to the borders of a Leproſie, to be hardly or never cured.

Impetigo ſucceeding a Scurvy, how to be cured.

Secondly, No better event attends this malady enſuing upon an inveterate Scurvy; perhaps hence the intentions of healing are a little more certain when this Diſtemper is placed as the Baſis or root of that; to wit, that the chief curing Indication being taken from thence, we muſt chiefly inſiſt upon Antiſcorbutical remedies; but the more ſharp and hot of this kind, as the Garden Scurvy-graſs, Water-creſſes, the Horſe-rhadiſh, Pepperwort, and others too much irritating the blood, inaſmuch as they diſſolve the temperament thereof more, and drive out more plentifully the Tartarous Coagulum to the skin, are always diſcovered to be more prejudicial than advantagious; and for this reaſon the uſe of Baths, or bathing in hot waters, which namely evacuate the humours of the whole body by an abundant Evaporation, and cleanſe the pores of the skin, and ſeem very available in this malady, often-times are ſo far from helping, that thoſe Eruptions are wont to be exaſperated from thence and very much encreaſed: for I have known many not extreamly Impetiginous, to have gone to our Baths, to bathe in the hot waters, that have returned altogether Leprous. Wherefore, when the Symptoms of this diſtemper ariſe from a ſcorbutick evil, all elaſtick things are to be avoided, and only the more temperate, endued with a Nitrous, Vitriolic or volatile Salt, are to be adminiſtred. We will lay down ſome Models of each ſort; As firſt Cryſtal Mineral, Juices of ſome Herbs and Decoctions, Salt and Mineral purging Waters, are moſt predominant with a Nitrous Salt.

Hot antiſcorbuticks do not agree.

Nor Baths.

But only the more temperate Remedies endued with a nitrous, vitriolick or volatile Salt.

Forms of Nitrous Medicines.

Take of Cryſtal Mineral, or Nitre purified one ounce, Flowers of Sal Armoniack one dram, bruiſe them in a glaſs Mortar, give one dram three or four times in twenty four hours.

Take of the leaves of Houſleek the greater two handfuls, bruiſe it and boyl it in two pound and a half of new Milk till it turn to Curds and Whey, ſtrain it, and take a pint of the clear liquor twice in a day.

Water of Sowthiſtles.

Take of the leaves of Dandelyon ſix handfuls, bruiſe them, and put them into a glazed earthen pot with a cover, which put in an Oven after the bread is drawn out, let it ſtand ſix or ſeven hours, then pour it through a Strainer, the doſe is four ounces to ſix of the clear liquor, thrice or oftner in a day.

Cucumbers.

Cucumbers being endowed with a Nitrous quality are advantagious by experience againſt this diſeaſe, wherefore in lieu of a Sallad let them be plentifully and often eaten; moreover three or four of them cut into ſlices, let them be infuſed, and ſtopt cloſe, in three pints of Spring-water all night; to the clear liquor poured out, adde Sal Prunella two or three drams, the doſe is half a pint thrice or oftener in a day. For the ſame purpoſe Decoctions of the leaves in running water together with the fruit do profit.

Purging Mineral Waters.

1. Certain mineral purging waters, of which ſort are chiefly thoſe of *North-hall*, an Analyſis being made by Evaporation, manifeſtly ſhew a Nitrous Salt with which they are imbued, and I have ſometimes found the daily drinking about four pintes for many dayes, to help againſt a gentle Impetigo.

Vitriolick acidule waters.

2. But as I have before hinted, thoſe Mineral waters endued with a vitriolic Salt, of which kind are the *SPAW*, and *Tunbridge*, and *Aſtrope* Wells, do far excell thoſe Nitrous, and all other Remedies, and do more prevail in the Cure of an Impetigo. To thoſe Patients that have not the opportunity of uſing theſe waters, I uſed to give with good ſucceſs againſt this diſeaſe common water impregnated with our Steel, and

and ſo rendring moſt exactly the guſt of thoſe Mineral waters. By reaſon of the Mineral Salts, or at leaſt the Mercurial Particles in them, Tin and Antimony are oft in uſe in the Cure of the Impetigo, and are uſually preſcribed with other remedies. Let the Filings of Tin, and Powder of crude Antimony, be infuſed in Ale for ordinary Drink: alſo Dectoctions of *Sarſa* made with the woods, are found beneficial againſt this Diſtemper.

Medicines of Tin and Antimony.

3. The uſe of a Viper, and the Preparations thereof, doth enough commend the wonderful vertue of volatile Salts in a grievous Impetigo, and alſo in curing the Leproſie it ſelf. This Antidote of that Diſeaſe is reported to be found out firſt by a caſual experiment, inaſmuch (as *Galen* reports) that drink being pour'd out of a Bottle wherein a Viper was put to poyſon one labouring with an Elephantiaſis, and ſo given him to free him from his miſery, prov'd his remedy, and what was deſtined for his murder, diſpatched an incurable Diſeaſe. Hither relates the Analogy, taken from the nature of this Animal, whence they collect that it helps in this Diſeaſe: becauſe the Viper yearly ſhakes off his ſcaly Coat, therefore ſome think its particles prevalent to throw off the leprous skin of a diſeaſed man; but though we do not attribute much to theſe things, yet it is manifeſt by frequent obſervation, that remedies of a Viper do profit in the Impetigo and Leproſie; the true reaſon whereof ought to be aſcribed much to the volatile Salt wherewith this Animal is endued. For the particles hereof deſtroy the fixt and acid Salts predominating in the blood of the diſeaſed, and diſſolve their combinations; notwithſtanding, the Salt, Spirit, and Oyl chymically extracted out of Vipers, by reaſon of their elaſtick particles, contracting an Empyreuma from the fire, profit not in this diſeaſe; as alſo neither *Spirit* nor volatile Salt of *Harts-horn*, *Soot*, *Blood*, and other the like *Armoniacks*; becauſe by violently ſtirring the Blood and Humours they rather diſſolve their temperament, and thruſt forth the Corruptions more plentifully into the skin. Wherefore the more ſimple Preparations of Vipers, as broths from their fleſh boil'd in water, and Drinks impregnated by Infuſions, and Decoctions, and powders being made of them dryed and beaten, are preſcribed more ſucceſſefully againſt this Diſeaſe. Moreover not only the boyl'd fleſh of Vipers, but of any other kinde of Oviparous Snakes being taken in lieu of ordinary food do oft afford notable relief.

3. *Medicines endued with a volatile Salt.*

Chiefly prepared of Vipers.

But not chymically.

Broths and infuſions of Vipers.

4. The Impetigo or ſcaly eruption of Pimples, and formed as it were into cluſters, is ſo frequent and familiar a ſymptome of an inveterate Venereal diſtemper, that we firſt ask the Patient whether ſomething of that malignity be not concealed of which they are conſcious; and if we perceive the matter ſuch, all Specificks againſt this Diſeaſe, and Antiſcorbuticks being omitted, we muſt come to the Decoctions of Woods, and thoſe little or nothing helping, we muſt deſcend to the uſe of Quick-ſilver. And truly by this method I have cured many that were accounted Impetiginous and Leprous, (who have been handled long in vain, and wretchedly vexed with other Remedies appropriate to theſe diſeaſes:) But we referre this ſort of Impetigo to the Pathology of the Venereal diſtemper, whereto it is an Appendix.

4. How the Impetigo following the Pox is to be cured.

II. The ſecond Indication curatory relating to the Diſeaſe it ſelf, and the primary ſymptom, to wit, the ſcaly eruptions and cluſters of Puſtules, preſcribes Topical Remedies to be applyed to the outer skin for the removing theſe effects; for which purpoſe in the firſt place Baths and Liniments are convenient: which yet rarely or never help of themſelves, unleſs the procuring cauſe, that is, the Tartarous diſpoſition of Blood be firſt purged out.

The ſecond Indication Curatory.

There is a vaſt medley of Topicks of this ſort vulgarly vented, as well by Phyſicians as by Empiricks and Quacks; among all which notwithſtanding, Baths or Liniments compounded of Tarre do far excell all other Remedies of either kind, inſomuch that we ſhould only uſe theſe but for their ill ſavour; wherefore we will annex ſome models of Compoſitions both with and without Tarre.

Topicks of Tarre are the beſt.

Wherefore, for Baths it is common to take water out of Tubs wherein Tarre hath long ſtood, and impregnated with the infuſion thereof: Or,

Take of Tarre two pound, and with white Aſhes ſifted incorporate it into a groſs maſs, which boyl in a ſufficient quantity of Spring-water, adding leaves of Ground-Ivy, Fumitory, white Horehound, the roots of ſharp-pointed Dock, Enula-campane, of each four handfuls, make a Bath to be uſed with government; Or let ſuch a Decoction be prepared without Tarre for Patients abhorring the ſmell.

Baths. *Sulphureous Baths* as well Natural as Artificial are found by experience leſs appropriate, yea for the moſt part the former do prejudice; Moreover, every bathing ought cautiouſly to be adminiſtred: for becauſe this adminiſtration exagitates the blood, and puts it into an Effervesence, its Temperament is endangered (as has been ſaid) rather to be diſſolved, and the corruption to be ſpread more plentifully over the skin.

Liniments. 2. *Liniments* whoſe uſe is more ſafe, and convenient, are of a Triple kind or degree, *viz.* Gentle, Indifferent, and moſt Strong; of each of theſe we will propound one or two patterns.

1. Mild Liniments. 1. Firſt therefore in a ſlighter Impetigo, when the Eruptions and Cluſters are ſmall, Faſting Spittle is commended; likewiſe the weeping of green Wood in the Fire, alſo mere rubbing them with roots of ſharp-pointed Docks bruiſed and macerated in Vinegar: Or,

Take Oyl of Tartar per deliquium, *Oyl of Nuts or Almonds by expreſſion of each equal parts, make a Liniment to be uſed to the parts affected twice in a day.*

2. Strongr, of Tarre. 2. Liniments of the Second kinde have Tarre for an Ingredient, which is eſteemed above all.

Take of Oyntment of Roſes ſix ounces, of Tarre two ounces, melt them together: Or,
Take a fat piece of Weather-mutton, which ſtick with the roots of ſharp-pointed Docks, ſpit it and roaſt it, and in the mean while baſte it with Tarre dropt leiſurely upon it; the Dripping being received in a Veſſel under it, keep it for an Oyntment moſt excellent for an Impetigo.

3. The ſtrongeſt of Mercury. 3. The moſt prevalent Liniments are Mercurial, *viz.* thoſe made with Quick-ſilver or Præcipitate. Let the model of the former be that preſcribed already againſt the Scab; for the other,

Take of white Præcipitate three drams, Oyntment of Roſes three ounces, mix them, for to anoynt the parts chiefly affected.

The uſe of theſe ought chiefly to be ſuſpected in this Malady; for if ſpitting be raiſed, that great glutt of matter impacted in the pores of the skin will be moved, which if the whole together ruſhing too much towards the *Ductus Salivales*, gather about the parts of the Throat, will endanger ſuffocation.

A notable Relation. Some years ſince a Virgin of a Noble Family, being of a hot Temperament, and endowed naturally with a ſharp and ſalt blood, after being a long time obnoxious to an Impetigo, almoſt from her Cradle, about her riper years began to be afflicted more grievouſly; for the cluſters of ſcaly Puſtules covered not only her Arms and Thighs every where, and the other covered parts of her body, but alſo her Hands and Face were ſo defiled, that ſhe was aſhamed to appear abroad or converſe with others of her rank. Leſſer remedies almoſt innumerable were exhibited without ſucceſs; by uſing Baths ſhe at firſt appeared relieved, but at length grew worſe thereby. *Aſtrope* Wells which have cured ſome, afforded her little or no relief. Wherefore, when all ordinary means would not effect any thing, I propounded Salivation, as a remedy more prevalent than all the reſt and (as it is accounted) the laſt. When the Parents and Patient readily conſented to this advice, preparing her body duely by Purgation and Phlebotomy, I gave her (after our manner) Pills of Solar Præcipitate two dayes, and after the interval of one day, the remedy being repeated the next, an abundant and laudable ſpitting began, and continued for a month without any ill ſymptome; to keep which in its due tenour, I applyed a Mercurial Oyntment to the bending of the Joynts and the places moſt affected one while to one, another while to another. Before the finiſhing of this courſe, all the Eruptions vaniſhed; notwithſtanding to confirm the Cure, as alſo for the extirpation of the Mercury, ſhe remained another month in Purging, Sweating, and Diet of the Decoction of *Sarſa*, *China*, &c. in which time ſeeming perfectly cured, ſhe ſo remained for about forty dayes. But afterwards though ſhe obſerved an exact courſe of Diet, the ſame diſeaſe began to bud forth again, and leiſurely encreaſing, at length it advanced into its former ſtate. I being confounded with this event, perſwaded her to hope an alteration for the better after her Menſtrual Flux, which was ſuddenly expected. Not-

Salivation cures for a time the Impetigo, but with a relapſe.

withſtanding,

withſtanding, after long delay that Criſis at length happening, and managing her ſelf regularly after it, brought no Cure or eaſe of that Diſeaſe, but rather a freſh aſſault. Whereupon recourſe was had again to Phyſick, and divers Remedies aſſay'd, all which when they became fruſtrate, her friends importuned that ſhe might ſalivate again, to wit, allured by this hope, that that method which cured her for a ſhort ſpace, being adminiſter'd again, would cure her either for a longer ſpace or altogether. Wherefore according to their wiſhes, the ſame courſe of ſpitting and ſweating repeated for two months ſpace, and thereupon the Puſtules every where going off, the Noble Virgin ſeem'd again wholly to recover her health. But within a fortnight after the courſe finiſhed, the Puſtules and their Cluſters again appeared, and leiſurely encreaſing daily in number and bulk at length grew fouler than before, inſomuch that like an *Hydra*, after the loſs of one head this diſeaſe received ſevenfold.

That remedy repeated, did not thoroughly cure the Diſeaſe.

I knew another ſtrong man endowed with a luſty habit of Body, who after he had laboured with an Impetigo many years, the malady ſtill encreaſing, and being advanc'd to the higheſt, he was covered all over with a white Scurf, as it were leprous, that every night the Scales fell off like Bran in great plenty in his bed, and might be gathered up in heaps. This man for Cures ſake firſt tryed the ordinary Remedies of every kinde, notwithſtanding without ſucceſs; and afterwards trying a lighter Salivation, found himſelf nothing better: but afterwards the ſame method being repeated, by a long and painful Spitting, he ſeemed to be reſtored to health; but within three months the ſame diſeaſe budding out, in a ſhort ſpace arrived to its former outragiouſneſs; Moreover, when he had undergone the third time that moſt painful Remedy, that affect, which ſeemed expulſed for a certain time, returned again; and afterwards maugre this and all methods, it exercis'd its Tyranny during the Patients life. It will not be requiſite here to diſcourſe any thing of the *Lepra*, which being only a more intenſe degree of the former Malady, for the moſt part admits of no Cure. As to what relates to other Tumours, and their manifold kinds, and the Ætiologies or Reaſons of each, I confeſs I am ſcarce able to contain my ſelf, but that I ſhould enter upon that pleaſant Field of Speculation. But this ſeems as irrational and unuſual, as for one wearyed with a long Courſe, and breathleſs at the end, running beyond his Poſt, preſently to begin a new Race.

FINIS.

FINIS.